THE MIDLAND RAILWAY

C. HAMILTON ELLIS

£1.30

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IAN ALLAN

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BY
HAMILTON ELLIS

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PREFACE

THIS does not pretend to be a learned history. Other people have tried to write such a thing, on the Midland Railway, in the remoter past, with variable degrees of success. Nor does the author claim that it contains a detailed record of all the Midland locomotives. For many years past, Mr. P. C. Dewhurst has been collecting and publishing the closer details of Midland locomotive lore, and it would be impertinent, besides very difficult, to plant a rival vineyard. Rather, the present author has tried to give a short general survey of the Midland Railway, and of the trains which worked it, in days to which we cannot return.

Nowadays, there are fathers of growing families who never knew the Midland Railway, nor yet the turmoil of conflicting loyalties which arose out of the grouping of the Midland, under the Railways Act 1921, with the London and North Western Railway. To many of us at the time, it was unseemly, improper, almost incredible, whether we favoured the traditions of Derby, or those of that other establishment at Crewe. But so it was. Government had ordered it.

Here, then, for those who loved a very great railway, and like to recall it, and for those who never knew it, but have heard of its renown, is a portrait of the Midland. Its delineator hopes it is not a bad portrait. In whatever qualities it may be found to possess, it owes much to the sympathetic collaboration of Mr. George Dow, M.Inst.T., A.I.Loco.E., both in his official capacity as Public Relations and Publicity Officer of British Railways, London Midland Region, and disinterestedly as a lover and admirer of the Midland Railway. My friend and neighbour, Mr. J. E. Kite, who lived on the Midland for many years, has most patiently read the book in proof.

CUTHBERT HAMILTON ELLIS

Brighton, 1953.

Rumbling under blackened girders, Midland,
bound for Cricklewood,
Puffed its sulphur to the sunset where that
Land of Laundries stood.
Rumble under, thunder over, train and tram
alternate go,
Shake the floor and smudge the ledger,
Charrington, Sells, Dale and Co.,
Nuts and nuggets in the window, trucks along
the lines below.

—JOHN BETJEMAN

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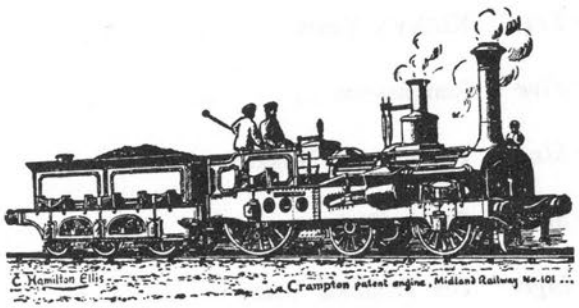

C. Hamilton Ellis
...a Crampton patent engine, Midland Railway No. 101 ...

Chapter One

ORIGINS

THE Midland was a magnificent railway.

A statement like that may be suspect. Too often, the old enthusiast, professional or amateur, looks back at a favourite of his youth, and would have his younger hearers believe that in excellence of service, efficiency and elegance it was far superior to its contemporaries. Certain railways, now shining favourites in retrospect, were in fact poor things.

But the Midland *was* magnificent. It had two of the most spectacular main lines in England—Derby to Manchester and Settle to Carlisle. It had—and how rarely among our railways—notably handsome stations. Its passenger trains, from 1875 to 1923, had the most comfortable third-class in the world. It was not a line of giant locomotives; its fast trains were light and frequent, smartly timed without stunting. They were stately things, extraordinarily clean and smart, in which respect its locomotives were rivalled, perhaps, only by the London, Brighton and South Coast. There, however, the resemblance between the two railways ended. In its goods traffic the Midland provided one of the sights of the shires—the immense coal trains snaking south from Toton. Its officers included some of the most remarkable railwaymen in history. It had its faults. So had Lorenzo the Magnificent.

By the end of the nineteenth century, the Midland probably stood higher in public favour than any other railway in Great Britain, so strongly do comfortable trains and worthy stations count with travellers, more ever than did things like the speed stunting of 1895 and other years. Before the Midland became the pioneer of centralised control, it was sometimes eccentric as a timekeeper, but even then a third-class local passenger could regard the inside of his carriage and feel that the Midland Railway considered him a person of importance. The London and North Western condescended, the Great Western was boastful, the Lancashire and Yorkshire was austerely efficient, the London and South Western was stodgily reliable. The North Eastern, an admirable railway, did its best to save the East Coast face.

Having thus let loose the cat at several pigeons, let us to business. In 1922, the last year of its separate existence, the Midland was by mileage the third largest railway in Great Britain. The Great Western and the London and North Western held first and second place respectively. The Midland exceeded both in the

number of its goods vehicles, which came to the astonishing total of 107,617, the majority of them coal wagons. This figure was exceeded only by the North Eastern Railway, which took fourth place in route mileage.

If a railway could be said to have a "presence," that of the Midland was second to none. When it absorbed the London, Tilbury and Southend (an estranged child of the Great Eastern) in 1912, its system extended from Shoeburyness to Carlisle, and from Lincoln to Bristol and Bath. It had two sokes in the form of detached lines between Hereford and Three Cocks Junction on the Cambrian Railways, and between Swansea and Bryn Amman. Of its numerous joint interests, the Somerset and Dorset, which it held in alliance with the London and South Western, took it to Bridgwater, Poole and Bournemouth; the Midland and Great Northern to Norwich, Yarmouth and Lowestoft, and the Cheshire Lines (joint with the Great Northern and Great Central companies) to Manchester, Liverpool, Chester and Southport. There were smaller joint lines, including the Swinton and Knottingley, giving access to York, the Portpatrick and Wigtownshire and the Forth Bridge Railways in Scotland, and the County Donegal Railways, which last it owned jointly with the Great Northern Railway of Ireland. As recently as 1947, your author spent several hours, from one cause and another, in a Donegal carriage which was tastefully decorated with *Places of Interest on the Midland Railway*. Further, the Midland had acquired by amalgamation in 1903 the Belfast and Northern Counties Railway, the joint Donegal connection coming through this. The London and North Western was the only other railway company to own, or jointly own, lines in England, Scotland, Wales and Ireland. The Midland was concerned in more joint railways than any other company, and these included the three largest joint railways, the Cheshire Lines, the Midland and Great Northern, and the Somerset and Dorset. Midland Railway steamer services were run from Heysham to Belfast, to Douglas (Isle of Man), and lastly but importantly, from Tilbury to Gravesend.

Yet, for all its grandiosity, the Midland was not an aristocrat. The histories of the Great Western and the London and South Western went clear back to Acts of Incorporation in the eighteen-thirties. But the Midland, like the North Eastern and the London and North Western, was not the child of brave pioneers who had fought doughtily through Parliament for its very existence. The Midland Railway was an amalgam of smaller railways, two of which had been previously at feud, but which were drawn together by the urgent need for pooling their slender resources, and also, in Kipling's phrase, by *ties of common funk* inspired by threats from outside their sphere.

One would like to think of the bland, altruistic John Ellis as the Father of the Midland Railway, but the man responsible for the union which brought it forth was George Hudson, a gross magnifico who was later to earn plenty of odium. Yet the infant railway owed very much to Ellis, and to George Stephenson, and something of their excellence seems to have got into its fabric, to stay there for as long as there *was* a Midland Railway. Certainly, Ellis and the Stephensons, father and son, were principally responsible for what became its oldest section, the Leicester and Swannington Railway, and although this was not one of the objects of Hudson's original amalgamation, it can be taken first without impropriety.

In pre-railway years, much of Leicester's coal came from the Nottinghamshire coalfields by canal. The Leicestershire colliery owners were at a disadvantage in regard to their own county town, to which they could transport coal only by road. The carts were very slow and subject to delay in bad weather. William Stenson, of Whitwick, visited the north-east in 1827, and, seeing the Stockton and Darlington Railway at work, realised that here was the sort of thing to move the Leicestershire coal. He discussed it with John Ellis, a wealthy Quaker weaver who knew George Stephenson. They agreed on the need for a steam railway, and Ellis went off to Lancashire to consult at once with the Father of Railways, whom he found on the Liverpool and Manchester Railway works in Rainhill cutting, and in a thundering temper over something which had gone wrong.

Ellis assumed his best Society of Friends smile and invited Stephenson to dine with him. Comforted with good beef, the great man began to listen while Ellis talked and unfolded a map of the Leicestershire coalfield. That night Stephenson, with his son Robert, returned with Ellis to Leicester, and the Leicester and Swannington Railway was conceived in the Bell Hotel there. The first meeting, to appoint a committee, was held at the Bell on February 12, 1829. Robert Stephenson was appointed engineer, and the little company obtained its Act of Incorporation on May 30, 1830, two and a half months before the opening of the Liverpool and Manchester Railway.

The line has often been described. It resembled the Canterbury and Whitstable in that it possessed a tunnel, and was worked partly by cable, but in the Leicester and Swannington case the cable haulage was purely local, on the inclined plane at Bagworth, rising at 1 in 29 towards Swannington and worked by gravity, and a much steeper though shorter one at the Swannington end, descending at 1 in 17 and worked by a stationary engine. Construction met with various setbacks. Daniel Jowett, one of the contractors, fell down

a working shaft of Glenfield Tunnel and was killed on April 5, 1831. The line was about sixteen miles long. Its first locomotive, the *Comet*, came by water from the Stephenson's old Forth works at Newcastle-upon-Tyne—by ship to Hull and thence by canal boat to Leicester, where it first raised steam on May 5, 1832. It was a characteristic Stephenson engine of the period, with four wheels coupled. Later, to steady it, a trailing axle was added, making the wheel arrangement 0–4–2.

All but one of the Leicester and Swannington's ten engines were of this type, though later ones were larger, of the 0–4–2 and 0–6–0 types—in fact, coupled versions of the famous *Patentee* on the Liverpool and Manchester Railway. The exception was *Liverpool*, a Bury 0–4–0 engine with bar frames, of the type adopted in America and, in early days, on the London and Birmingham Railway. In England at that time, the inside cylinder sandwich-framed engine was almost universal apart from those cases where companies had let themselves in for the Bury type, which a few firms copied for a while. *Comet, Phœnix, Samson, Goliath, Hercules* and *Atlas* were by Robert Stephenson; *Liverpool*, as remarked, by Bury; *Vulcan* by Tayleur; *Ajax* and *Hector* by Haigh Foundry.

The rolling stock was of no particular excellence. Small four-wheeled wagons and coaches were used for all traffic, and just when a wagon ceased to be a wagon and became a carriage was not easy to guess. Of superior sort was a composite coach with three compartments, the outer, second-class specimens being roofed but open in the top quarters, while the central first-class was a flat-sided box with narrow windows. The carriages were painted a plain blue. Far off was the day when the Midland Railway would emphasise its leadership in coachbuilding by calling in Waring and Gillow to decorate, " regardless," a new dining-car in all the exuberant magnificence of late Victorian conventional taste.

The road varied. It was laid with fishbellied iron rails, partly on cross-sleepers and partly on stone blocks, but through Glenfield Tunnel there was a baulk road—i.e. rails laid on longitudinal timbers. Someone must have been guilty of an error of judgment in laying these, for when the inaugural train went through the tunnel on July 17, 1832, the *Comet* struck the arch with her chimney and emerged in a sadly debauched condition. Long Lane (Coalville) was reached in April, 1833, for coal traffic on the 22nd, and passenger traffic on the 28th. The final section, Long Lane to Swannington, followed on November 25 of the same year.

It is supposed to have been on the Leicester and Swannington Railway that trains first gave audible—or perhaps musical—warning of their approach. The story is that on May 4, 1833, the *Samson*

ran into a cartload of beetroot and eggs on a level-crossing at Bagworth. A musical instrument maker was called in to provide this and the other engines with steam horns, or trumpets, which were set upright with a turncock on each manhole cover. Mr. Charles Clinker, a learned historian commanding respect, has dealt with various apocrypha regarding the Leicester and Swannington Railway (*The Railway Magazine*, March, 1953), and has found no reference to this accident in the records of the railway. But the trumpet legend, if legend it be, has been ever a persistent one, even though the steam whistle was known at that time. It was published in the *South Western Gazette* of June 1, 1893, and is quoted in full in Appendix E. An authentic odd feature of the Leicester and Swannington Railway was its use of hexagonal bronze tokens instead of slips or tickets.

As remarked, the Leicester and Swannington later became the oldest part of the Midland Railway, but the true original constituents thereof were three lines at first unconnected with it—namely, the Midland Counties, the Birmingham and Derby Junction, and the North Midland Railways. Of these, the Midland Counties was indeed a consequence of the Leicester and Swannington. The arrival of the latter cast a gloom over the Nottinghamshire coalfields, and at a meeting of the coal-owners in the *Sun* public house at Eastwood, it was decided that the only possible countermove was to build a railway from the Erewash Valley to Leicester. William Jessop, the iron rail pioneer, credited with the invention of the "chair," was the expert member, but money was difficult, and aid was sought from the powerful north-country financial clique known to history as the Liverpool Party. They were forthcoming, but arbitrary. The Midland Counties Railway was safely incorporated, and built its line, but the Erewash Valley line was dropped from the project. Gloom reigned once more over the Eastwood pits. The Midland Counties Railway was to have a main line from Derby to Rugby on the London and Birmingham Railway, with a branch to Nottingham. It was opened in three stages: Derby to Nottingham, June 4, 1839; Trent Junction to Leicester, May 4, 1840*; and Leicester to Rugby, July 1, 1840.

Between Nottingham and Leicester was made the first large organised excursion by rail, on July 20, 1840. It was got up by the Nottingham Mechanics' Institute, which induced the company to run a special train for a guaranteed party at half the regular fares. A week later the Leicester Mechanics' Institute returned the compliment to Nottingham. Railway excursions became popular in the area. Thomas Cook started his tourist business by running a

* Formal opening (*Leicester Chronicle*). H. G. Lewin gave May 11 for the public opening.

monster temperance excursion. The Midland Counties company began organising excursions on its own account, on one occasion conveying some 2,400 people in a single train of 65 four-wheeled carriages and wagons. It left Nottingham at 8.30 a.m. and for two hours there was great expectation. "At 11.30, alarm was felt at the non-appearance of the train. An engine with several of the railway labourers started off to meet it. Another feverish half-hour crept on, when a second engine carrying a few of the directors was dispatched. At half-past twelve, however, a thin vapour, a little smoke, then a huge undulating mass was discovered at the extremity of the horizon, and gave assurance that all was safe. In a minute, a long, lingering undulating mass of wood and iron slowly emerged from the dark mass of vapour which partially accompanied it like a bodyguard, and rushed along the line with a noise resembling the dashing of a thousand surges on a rocky shore." (*Leicester Chronicle.*)

Interesting as a piece of contemporary penny-a-line journalese, the article leaves us wondering a little, not only at the way in which enginemen and directors went prospecting for the Lost Special (did they travel on the same road and eventually couple up?), but at the curious motion of the rolling stock, twice remarked, and the lively way in which the numerous locomotives, when in sight of home, jumped from a smoky crawl to something like " last-in-bed-to-put-out-the-light."

The North Midland Railway from Derby to Leeds via Normanton was a Stephenson line, though an alternative had been surveyed by Charles Vignoles, who was responsible for the Midland Counties. Sheffield, for all its importance, was at the end of what amounted to a branch line, the Sheffield and Rotherham Railway, joining the North Midland at Masborough, and itself dating back to formal opening on October 31, 1838, with public traffic on the following day.

The North Midland involved much heavier construction than the Midland Counties. In its 72 miles it had 200 bridges and seven tunnels, and building it cost £3,000,000, a massive figure for the eighteen-forties. It would be most unjust to suggest that George Stephenson owed his eminence to any sort of luck; his career epitomised the results of dogged perseverance coupled with astuteness, two qualities which the much more original Richard Trevithick lacked. But Stephenson was fortunate for all that. He struck rich coal measures in making Clay Cross tunnel, and cashed-in on his discovery.

Clay Cross sent to London its first rail-borne coal. The North

Midland Railway was opened as far as the junction at Masborough on May 11, 1840, and through to Leeds on June 30 of that year (public opening, June 31). It was notable for, among other things, its beautiful station houses, some of which may still be seen. The old terminus at Derby, however, with its three-span roof, covering goods station, carriage sidings, and the single passenger platform, was swept away at a time remote from now. It was approached by a reverse curve so violent that stories were told about it. David Joy recorded one, of the Crampton patent engine *Lablache* on trial with an enormous train in the late 'forties, being brought to a stand because the driver saw red lights ahead. The fireman (according to the story) was sent to investigate, and returned to tell the driver that they had stopped at their own tail-lights. Joy commented: " But still, this must be American."*

Then, in the Midland set-up, there was the Birmingham and Derby Railway, also surveyed by Stephenson, and almost simultaneously with the North Midland, to which it was an obvious rival. This cast its eyes south, added " Junction " to its title, and was opened from Derby to Hampton-in-Arden on the London and Birmingham as early as August 12, 1839. The section from Whiteacre to Birmingham followed on February 10, 1842. In spite of the railway's original name, a route to London was evidently soon first in the Board's mind, and Birmingham could wait. Co-existence of the Birmingham and Derby Junction, and the Midland Counties, could only result in ferocious competition for the South traffic. When the two companies had fairly beggared each other, and were further threatened by the possibility of a broad-gauge invasion of Birmingham, George Hudson, who had made himself powerful on the Midland Counties Board, proposed amalgamation of both lines with the North Midland. He was seconded by John Ellis. So to these two men, the grand juggler and the worthy of worthies, the Midland Railway Company owed its beginnings. It was incorporated by amalgamation on May 10, 1844. With over 170 miles of route, it was then the largest railway in the kingdom under single management.

Dismissals, of course, were numerous when that amalgamation took place, and one was that of James Allport, manager of the Birmingham and Derby Junction. He was to be one of the greatest men in the Victorian railway world, and it is probable that Hudson fully realised his promise. For Allport, although sacked, found himself immediately appointed manager of the Newcastle and Darlington Junction, part of Hudson's North Eastern dominion. He had taken a very active part in his old company's rate war with the Midland Counties, and was one of the originators of the

* The Joy Diaries.

Railway Clearing House. He was to return, and to become a most memorable general manager of the Midland Railway.

All three of the constituent companies had works of a sort at Derby, and these were united to form the nucleus of the great establishment we know to this day. The Birmingham and Derby Junction Railway may be said to have begun the continuity of Midland locomotive history. For one thing, it provided the Midland Railway with a locomotive superintendent.

Matthew Kirtley was a man of the north-east, like Stephenson, and had been born at Tanfield in February, 1813, the year after Napoleon's retreat from Moscow, two years before Waterloo, the year of *Puffing Billy*. At the age of thirteen he had gone to the new Stockton and Darlington Railway. Later he fired on the Liverpool and Manchester Railway, where he was present at the opening, and then on the Warrington and Newton, before going as driver first to the Hull and Selby Railway and then to the London and Birmingham. He is believed to have driven the first London and Birmingham train—the first real main line train—to enter London. In 1839 he was appointed Birmingham and Derby Junction Railway locomotive foreman at Hampton under Birkenshaw, the company's engineer, and in 1841, at the age of 28, he became locomotive superintendent. He was retained in that office, for the entire railway, when the Midland Railway was formed, and was to command Derby Works for the rest of his life.

The Birmingham and Derby Junction Railway hopefully started business in 1839 with twelve 2–2–2 locomotives from various makers, but all having 12in. by 18in. cylinders and 5ft. 6in. driving wheels. Pressure was about 50lb. per sq. in. There were three by Tayleur of Newton-le-Willows, forerunner of the Vulcan Foundry Company. They were named *Derby*, *Birmingham* and *Burton*. Like other Tayleur engines of the time, they had two domes each, one on the firebox to increase dry steam space, and the other, with the steampipe, forward on the boiler barrel. A good coloured chart of the design was published in *The Locomotive* of June 14, 1952. On the occasion of Queen Victoria's visit to Chesterfield in 1843, *Burton* worked the royal train north of Hampton.

From Mather Dixon came three engines, also double-domed, and named *Barton*, *Tamworth* and *Hampton*. They were the least satisfactory locomotives of the B. & D.J.R., and Kirtley seems to have got rid of them soon after the formation of the Midland Railway. While the foregoing six " express " engines were named after towns on the railway, the others of the type were named after rivers. Three Hawthorns were named *Anker*, *Tame* and *Blythe*, and three of Sharp's beautiful design, with which Charles Beyer is

believed to have had something to do in his youth, were called *Derwent*, *Trent* and *Dove*. The Hawthorns and Sharps were single-dome engines, the second-named having the very handsome Etruscan brass dome casing which for some years was their maker's hallmark. The *Dove* got herself into trouble with the London and Birmingham engineer's department, it being alleged that her wheels were out of gauge and that she damaged points and broke chairs at Hampton. Whether this were so or not must be left uncertain. Sharp's workmanship was notably good, and the London and Birmingham permanent way reputedly poor.

These little single-wheelers each weighed upwards of thirteen tons. The Sharps weighed 14 tons. 11 cwt. and carried 55lb. pressure, with a total heating surface of 519½ sq. ft. The Hawthorns weighed about 13½ tons, but carried 778 sq. ft. of heating surface. Pressure was 50lb. These pressure figures must be taken easily. There were no proper gauges, and the enginemen sometimes adopted an arbitrary attitude towards spring balances, working up to 60lb. at least. Further to these engines, the B. & D.J.R. stock included two 0–4–2 goods engines called *Kingsbury* and *Willington*, built by Thompson & Cole. All the locomotives had outside sandwich frames supplemented by inside frames of iron.

The Midland Counties Railway, like its neighbour the London and Birmingham, favoured almost exclusively small four-wheeled engines—single for passenger and coupled for goods. Edward Bury was the prophet of the four-wheeled locomotive; he saw no reason why engines should ever be larger than they were already, and every reason why they should never be. Thus it was on the London and Birmingham, and so the Midland Counties faithfully followed suit. The engines were inadequate and unsteady. Of the Midland Counties locomotive stock (47 engines), 36 were Bury singles and six were Bury 0–4–0, variously built by Edward Bury & Company, Stark & Fulton, Jones Turner & Evans, Nasmyth Gaskell & Company, B. Hick & Son, and William Fairbairn. The others, sandwich-framed, were by the Butterley Company (2), Nasmyth Gaskell (1), and Jones Turner & Evans (2). A complete list, checked by Mr. P. C. Dewhurst, was published in *British Railways Magazine*, February, 1953. Those built by Bury were almost rigidly coupled to their tenders, becoming, in effect, like the American "Forney" of later years, without the Forney's bogie. The Forney engine, however, was a genuine tank design. The heavier the train, the more engines were added. That celebrated 65-coach excursion must have been a sight to behold!

On the North Midland Railway there was no such nonsense. North Midland engines, like those of the B. & D.J.R., were all six-wheeled, of Stephenson design, though built by various firms,

with inside cylinders, and some with both inside and outside frames. The inside frames of iron extended only from the back of the smokebox to the front of the firebox casing, while the main outside frames, of iron and timber sandwich construction, supported the boiler, firebox and smokebox by brackets.

The North Midland mail engines deserve some particulars as the first locomotives of a Midland constituent which could be justifiably called "express." They were larger than the standard Stephenson six-wheeled single, and smaller than the famous Gooch "Fire Flies" on the Great Western, which they somewhat resembled, though they were less elegant engines. The driving wheels were 6ft. in diameter, and the cylinders had 14in. diameter by 18in. stroke. Working pressure was 70lb. per sq. in., though 50-55lb., as we have seen, was usual at the time for engines on ordinary duties. The mail engines had the Gothic shape of firebox casing—i.e. square in plan, with the steam-space above built up into a bluntly pointed four-sided dome. Bury's haycock arrangement, sometimes confused with this, was a D-shaped firebox with a hemispherical space over it, and a small steam dome above that.

On the North Midland "Mails," a whistle of memorably piercing quality surmounted the Gothic casing, while on the boiler barrel were two safety valves, one a lock-up and the other loaded by a Salter balance, and both in bell-mouthed brass funnel casings. The chimneys gave the engines a peculiarly archaic appearance, even by the standards of 1840. The chimney barrel was in two pieces, joined about two-thirds of the way up, with an absolutely plain "stove-pipe" top. But on to this was fixed a spark arrester in the form of a dished sieve, mounted on four iron brackets. The aspect was not unlike that of the chimney top on *Puffing Billy,* though more massive. The cylinders were horizontal and the motion was the old-fashioned gab gear, not expansive. There was a single large cantilever spring under each driving axle-box, and double opposed springs to the leaders and trailers. The North Midland had some Stephenson "long-boilers." One of these, No. 54, was engaged in the Gauge Commission trials of 1845. As she left the road and turned over, her performance is best left to the kindness of oblivion.

North Midland goods engines were of the 0–4–2 type, in design similar to the passenger engines, and with the unusually large driving wheel diameter of five feet. In 1842 a 2–4–0 engine for the North Midland was fitted with the Howe-Stephenson link motion, the first example of this in practice as far as the author knows, and ante-dating the first use of the Gooch link motion on the London and South Western engine *Snake* (1843).

Six locomotives were constructed for the Sheffield and Rotherham Railway (vested in the Midland in 1845), but they saw little service on the Midland after being absorbed into that company's stock. It would appear that Mr. Kirtley looked at them and sighed, and decided that it would be a good thing if they faded away as soon as possible. Details are vague, but for what is known we are indebted to Mr. P. C. Dewhurst's encyclopædic knowledge of Midland locomotives, and his valuable series of articles in *The Locomotive* during the early nineteen-forties. In that journal of June 15, 1943, is illustrated a weird and wonderful arrangement, applied to *Sheffield*, an engine by Davy Brothers, for coupling wheels of unequal diameter. It was patented by Mr. Vickers, chairman of the S. & R.R., and applied by Isaac Dodds, inventor of the Dodds wedge valve gear, who was responsible for the company's locomotives, and was a coupling by belt drive, arranged outside the sandwich frames. A contemporary Press report suggests that the driving axle was thus coupled to the leading axle on one side of the engine and the trailing axle on the other, a most unmechanical arrangement, and, one would imagine, an awful warning to all locomotive superintendents who let the chairman tinker with the engines. Mr. Dewhurst, however, remarked that the drawing showed only two axles thus coupled, and that if the newspaper report were correct, the inherent weakness of the arrangement would have been doubled.

Early carriages were no better than they needed to be, but still better than some people's at that time. The first-class were similar to those of the London and Birmingham, with their " curved-body " compartments, box seats for the guard at each end of the roof, and luggage rails between. The compartments of a Birmingham and Derby Junction specimen were only five feet high, and the same measurement between partitions, the body being a little over 15ft. long. On the Midland Counties Railway a third-class of 1842 was an open " stand-up " with two pens reached by a central door each side. The passengers kept their balance by hanging on to longitudinal rails. A Midland Counties second-class had three compartments, roofed, but open above the waistline. Their miserable career was short, as Gladstone's famous Act of 1844 obliged all companies to provide closed third-class carriages, and in consequence the open-sided second-class was left with no excuse whatever for its existence. Furthermore, the Birmingham and Derby Junction company had provided three-compartment closed seconds from the beginning. They were not brilliant, but they were very much better than the common ruck of inferior class carriages at that time. All coaches were provided with spring buffers, only the locomotives having the upholstered-barrel type. Wagons were of the crudest four-wheeled dumb-buffered sort.

In August, 1845, the Midland Railway purchased our old friend the Leicester and Swannington Railway. The little line had done well, and several rival companies had cast covetous eyes on it. So its ten locomotives and the remarkable stationary engine on the Swannington Incline, also built by Stephenson's, and equipped with a very early example of a piston valve, were added to the stock of Midland motive power. Noteworthy of the Leicester and Swannington locomotives is the fact that they included the first example of the British 0–6–0 goods engine with inside cylinders, which was destined to be by far the commonest type on the Midland and on many other of the great coal-carrying railways until very recent times.

So the Midland Railway embarked on its seventy-nine glorious years. To the end, it gave an outward sign of its connection with the Leicester and Swannington Railway, and, through that, with a thousand years of English history. The standard of the kingdom of Mercia, whose capital was Leicester, and a whiff of whose tongue perhaps survives in what the South calls the "Midland accent," bore a wyvern, a mer-dragon, a mythical reptilian—or possibly batrachian animal—with finny wings. The Leicester and Swannington Railway seems to have taken up the wyvern as its badge, and the Midland inherited it. The heraldic device of the Midland Railway embraced the arms of Birmingham, Bristol, Derby, Leeds, Leicester and Lincoln. A shovel-tailed dolphin and a highly idealised salamander were the supporters, but for the crest there proudly sat the Wyvern of Mercia. This noble creature appeared alone in many places, on uniform caps in gilt, on furniture in mahogany, in terracotta on buildings, and in iron on bridges.

Chapter Two

THE HUDSON PHASE

IT must now be told how that wyvern came to surmount the arms of such separated cities as Bristol and Lincoln. The Midland company had been formed on the eve of the Railway Mania, for which Hudson and his kind were so largely responsible. Consequently, it was an heir to more amalgamations, and to extensions on a scale few people had envisaged for any single railwav company during the first railway boom of the late eighteen-thirties. As we have seen, the Midland company was anxious about possible incursions by the broad-gauge party from the south and west of England. The Bristol and Gloucester was an old ally of the Great Western. It was built to the broad gauge and opened, partly on the site of still older tramroads, from Bristol Temple Meads to Standish Junction, whence were running powers over the simultaneously opened section of the Cheltenham and Great Western Union Railway into Gloucester, on July 8, 1844. The connecting Birmingham and Gloucester Railway (standard gauge) was opened by stages during 1840, with completion on December 17. It was at Gloucester that the evils of break of gauge were first brought home to the British public, and it was clear that sooner or later there must be uniform gauge at least between Birmingham, rising metropolis of the Midlands, and Gloucester, the gateway to the West. The Great Western, of course, contemplated getting this route into its basket and pushing the broad gauge to Birmingham, but its benevolence towards the Bristol and Gloucester Railway had been somewhat of a skinflint order. The line had been worked from the beginning, not by the Great Western, but under contract by Stothert and Slaughter. The Birmingham and Gloucester Railway, however, worked its own traffic. It is well known that the locomotives included a number of American engines, of the celebrated Norris 4–2–0 bogie type with Bury-style boiler and bar frames, though there is also a mistaken impression that these were provided as banking engines on the formidable incline by which the railway negotiated the southern slope of the Lickey Hills between Bromsgrove and Blackwell, some two miles long at 1 in 37.7, by far the steepest gradient which had yet been allowed on a locomotive-worked main-line railway. The little Norrises were in fact used all over the Birmingham and Gloucester Railway. They had been selected in view of the fact that American railways followed natural contours far more closely than our own, and therefore it was considered that if anything could climb the Lickey, an American engine could. The Norris design, small though it was, had the virtue of placing a greater proportion of weight than usual on the driving

wheels, and was less likely to slip than the characteristic British 2–2–2 of the period.

Though the earliest of these engines were indeed built by Norris in Philadelphia, the design was repeated by several British builders during the independence of the Birmingham and Gloucester company. With light weights, they performed quite well, though by comparison with British locomotives they were very roughly built. David Joy noted of one of them: " The little thing could pull, but she was odd, plenty of cast iron in her, even the cross-head pins were cast iron."

The first eight, built by Norris in 1840, had 10½in. by 18in. cylinders and four-foot driving wheels, the driving axle being in front of the firebox, as in Stephenson's 4–2–0 " long boiler " engines of the middle 'forties. (Incidentally, both Stephensons and Edward Bury had declined the hazardous honour of building locomotives for the Lickey.) Ahrons gave the weight as nine and a half tons; Joy recorded " about eight." Six more by Norris, and nine built variously by Nasmyth, Gaskell & Company and by B. Hick, were somewhat larger, with 20in. stroke and cylinder diameter variously 11½in. and 12½in., and weighed approximately 13 tons. The boilers were not absolute copies of the Bury type, although the fireboxes had circular casings. The curves of the domed top were " Gothic " with the point cut off and replaced by a small round-topped dome. A somewhat similar style was taken up by Borsig of Berlin, who copied and improved on the Norris design for Continental railways from 1841 onwards.

An experimental tank engine, *Eclipse*, designed by William Church, with driving wheels and cylinders arranged, in relation to the boiler, rather like those of a Rocket class engine on the Liverpool and Manchester, distinguished itself by exploding at Bromsgrove during trials on the Birmingham and Gloucester Railway, killing both enginemen, Rutherford and Scaife. The fact that the designer of their tombstones carved locomotives on these, and went to Bromsgrove station to draw the first engine available, resulted in a persistent libel on the Norris type.

J. E. McConnell, later to become famous for his really magnificent locomotives for the London and North Western Railway's Southern Division, was appointed locomotive superintendent of the Birmingham and Gloucester Railway in 1841, and thought poorly of the Norris type. They were fair engines for light traffic over lightly-laid tracks, but they were not nearly robust enough for a line like the B. & G.R., which incidentally was laid with a baulk road like the Great Western and the Bristol and Gloucester. McConnell rebuilt some of them as saddle tanks, which increased their

adhesion, but in 1845 he built, specially for banking on the Lickey, a heavy 0–6–0 saddle tank engine called *Great Britain,* which at the time was the most powerful locomotive in the country. It had 3ft. 9in. coupled wheels and inside cylinders 18in. by 26in., and weighed 30 tons. McConnell said his engine could handle a load of 135 tons on the 1 in 37 bank, maintaining a speed of 8-10 m.p.h. from Bromsgrove to Blackwell.

Such was the first " Lickey Banker." About three-quarters of a century later, the Midland Railway was once again to build an unique engine for this formidable section, but that is a long way ahead in our story. The remainder of the Birmingham and Gloucester engines were of more ordinary types—2–2–2 expresses and some 2–4–0 " long boilers." The Norris type engines worked all sorts of train except the fast mails.

As remarked, the Great Western company had its eye on the Bristol to Birmingham route, but its overtures were ponderous, and its financial inducements discouraging. Clement Stretton, in his *History of the Midland Railway*, suggested that this company pulled a fast one with some secret diplomacy while negotiations were still in progress with the Great Western. Hudson would have been quite capable of such sharp practice—but, in fact, it was not so. John Ellis heard of the diplomatics between the Great Western and the Gloucester companies, while travelling in the same carriage as two of the latter's directors. He told them that the Midland Railway was ready to consider purchase. When negotiations with Charles Saunders of the Great Western failed, and not before, the Midland offered cash terms for the purchase of both the Gloucester railways, which were gladly accepted. So, in 1846, the Midland Railway acquired a most valuable new main line, and parried successfully the thrust of the broad-gauge party towards the heart of England. The Bristol and Gloucester, though now a part of the Midland, remained a broad-gauge line for some years, and standard gauge did not reach Temple Meads, Bristol, until 1854. The old rolling stock was maintained, having been taken over from Stothert and Slaughter, and in 1848 Kirtley built four " convertible " engines for the line, forerunning those built in later years by the Great Western and allied companies in anticipation of the abolition of as chairman. The company was not, as yet, a rival of the London and North Western*; indeed, while the Midland Counties and the

Expansion of the Midland system was considerable during the late eighteen-forties, thanks to the go-getting ambition of Hudson broad gauge.

* Formed in 1846 by amalgamation of the London & Birmingham, Grand Junction, and Manchester & Birmingham Railways.

Birmingham and Derby Junction had been knifing at each other, both had regarded the North Western as an ally in that it gave them their outlets to the south, via Rugby and Hampton respectively. Nor did the acquisition of the Gloucester lines upset the North Western, whose regard for Paddington was scarcely cordial. The Birmingham and Gloucester had enjoyed, by running powers, the use of Curzon Street station, the old northern terminus of the London and Birmingham Railway, and to these the Midland succeeded. When, eventually, the great New Street station was built, it had its "Midland side," and the peculiar differences of the two railways remained apparent there long after their ultimate amalgamation in 1923.

Hudson had his eye on the east and the north-east from the first. His old line, the York and North Midland, eventually incorporated in the North Eastern Railway, gave the Midland access to York, and Bradford was reached by means of the Leeds and Bradford Railway, opened on July 1, 1846, but two lines were built far out to the east on the Midland's own account. The Midland line from Nottingham to Lincoln was opened on August 4, 1846, two years before the Great Northern Railway got there. It was built without difficulty, but a line from Syston to Peterborough met with ferocious opposition. In its way lay Stapleford Park, the seat of Lord Harborough, who not only objected to the incursion of the railway for its own sake, but on account of the Oakham Canal, of which he was a substantial proprietor. The Midland surveyors were met by an embattled force of hobbledehoys, armed with every kind of unpleasant weapon that farmyard and gun-room could furnish. The Peterborough line was not completed until 1848, by which time the Great Northern Railway had begun to take shape.

The Midland steamed into the Railway Mania with gusto, adding its support to every line which could possibly benefit its own traffic or might, in decent time, become part of its expanding universe. At the instance of Hudson, the Midland proprietors gave sanction to 26 railway Bills which were introduced to that memorable Parliamentary session of 1846. Hudson was now at the height of his power. Many of his transactions were quite excessively shady —his policy with certain new companies in their first years of working was to keep the shareholders quiet by paying them handsome dividends out of capital, and then raising more money ostensibly for shadowy extensions. Fortunately, the Midland company itself was kept out of Queer Street by Ellis, who maintained a conscientious watch on the company's dealings. Hudson began to be suspect now by those who had trusted him—those who had been most obsequiously fawning were among the first to yell—and perhaps his first tumble was over the Midland's purchase of the Leeds and Bradford Railway, whose line, as we have seen, was

opened in 1846. The Liverpool Party got after him, and in 1849 managed to get a committee of investigation formed to examine his machinations. Thanks to Ellis, the committee found his house in order in regard to the Midland, but Hudson was obliged to retire from the Board, and he fared worse with other companies which had trusted him, his public life ending amid howls of wolfish rage from those with whose fortunes he had been juggling.

In 1850, the Midland became part of the first through railway route from the South of England to Scotland, through completion of the Royal Border Bridge connecting the York, Newcastle and Berwick Railway with the North British. The route was quaint to our ideas, for it began with what we know as the West Coast Route, as far as Rugby, extended through the Midland and the York and North Midland to York, there passing over to what, with the opening of Kings Cross station two years later, was to be the East Coast Route. The Edinburgh and Glasgow Railway was already in existence, so by 1850, by way of the Midland spider's web in the middle of the country, there was railway communication between London, the West Country, and the West Midlands on one side, with the North East and the two principal cities of Scotland on the other.

The Midland's Scottish connections were brief, of course, and the company was not to have its own route to the Border for twenty-six years longer, but it was not slow in seeking, and getting, another northern outlet. The North Western Railway (not the London and North Western, but what, at the time, was called the Little North Western) was opened from Skipton to Lancaster on June 1, 1850, and the connecting line between Skipton and Shipley on the Midland's Leeds and Bradford line dated back to 1847. This gave the Midland connection with the Lancaster and Carlisle Railway. In 1852, Ellis proposed amalgamation of the Midland with the London and North Western, and everything went smoothly until the latter company, thinking that everything was in the bag, started some characteristic spivvery. Ellis broke off negotiations, and instead purchased the " Little " North Western, away on the bleak Pennines. Appendages of this line were a branch from Clapham Junction (Yorkshire) to Ingleton, and the Lancaster and Morecambe line, open since 1848. The N.W.R., though a local railway, gave a direct route to the Scottish border and beyond from the West Riding of Yorkshire, independent of the ex-Hudsonian group of lines based on York and Newcastle. One other abortive scheme for amalgamation occurred in 1852. This time, both the London and North Western and the Great Northern approached the Midland with offers of friendly union, and a Bill was introduced to Parliament in the following year for the amalgamation of all three into one enormous railway controlling all traffic between south and

north. The Bill was thrown out on what the Commons righteously called "national grounds," the idea being that huge monopoly companies were an evil to be averted at all costs, and that small squabbling undertakings kept each other in order and the public interest safe. It may be remarked that the North Eastern Railway later obtained as nearly a monopoly as any railway company enjoyed in England,* and that it was also one of the best railways in the country, at any rate in its latter years.

So we have the Midland Railway, at the beginning of the 'fifties, in a form which was the nucleus of its system in the great days to come. Other lines built up to this time may be briefly mentioned. The Trent Junction to Pinxton line was opened on September 6, 1847; Nottingham to Kirkby in 1848; Leicester to Burton, August 1, 1849; and Kirkby to Mansfield in October of the same year. Further, there was the branch from Ambergate to Rowsley, then known as the Manchester, Buxton, Matlock and Midland Junction Railway, opened on June 4, 1849. This was most notable in that it was the small shoot from which, in later years, the magnificent main line through the Peak country to Manchester was to spring.

It can be imagined that Matthew Kirtley had, from these various railways, about as mixed a lot of bequests in the locomotive line as ever confronted a locomotive superintendent. From the North Midland Railway, which numbered its engines in series according to type, came thirty-two mail and passenger engines, all 2–2–2, and numbered by that company from 1 upwards. There were fourteen goods engines, consisting of ten 0–4–2 (Nos. 60-69) and four 2–4–0 (Nos. 70-73). Mr. R. Baxter† considers it probable that Kirtley, though a Birmingham and Derby Junction man, appropriated the North Midland numbering system for use in the Midland Railway stock list. This led to difficulties, and consequent need for re-numbering, whenever there was an influx of new engines from new construction or further amalgamation. Birmingham and Derby Junction engines had names but no numbers, prior to the amalgamation of the companies.

The Midland Counties Railway, which had started business with four-wheel Bury engines, had seventeen of this type with 12in. cylinders and ten with 13in. cylinders. They became M.R. Nos. 90-117. But additionally there were by now six Midland Counties passenger engines of the ordinary 2–2–2 type, which Mr. Baxter believes to have become M.R. Nos. 45-50, the Birmingham and Derby Junction engines of this type, previously noticed, being M.R. Nos. 33-44, in series after the North Midland singles. Ten 0–4–0

* In Scotland the North British Railway acquired an absolute monopoly of Fife. It was not a good railway.

† *Journal of the Stephenson Locomotive Society*, March, 1949.

and 0–4–2 goods from the Midland Counties and the Birmingham and Derby Junction were numbered 70-79, and the four North Midland 2–4–0s, Nos. 70-73, were renumbered as Midland Railway Nos. 120-123. The last of these was sold to the Eastern Counties Railway, becoming E.C.R. No. 140.

The first new engines of the Midland Railway were three 0–6–0 goods, which type Kirtley ordered and built exclusively for goods traffic, four-coupled engines being used thereafter only for ordinary passenger traffic, apart from the fastest trains. These goods engines were Nos. 74-76, and replaced three Midland Counties Bury goods with the same numbers. Three Stephenson singles from the Sheffield and Rotherham Railway were added towards the end of the year, when the Midland Railway had 53 single-wheel passenger engines, 14 0–4–2 goods, the three new 0–6–0s, three four-wheeled Bury goods, 27 Bury 2–2–0s, and the four 2–4–0 goods from the North Midland. During the following year, three single expresses and three more 0–6–0 goods were obtained. It should be noticed that in his early orders, Kirtley purchased the standard locomotives of various makers, and it was not until some years later that the characteristic Kirtley classes became apparent. To just what extent the Kirtley engines of the Midland Railway were designed by Kirtley, or whether he ever deputed design, like James Holden on the Great Eastern, the present author is not prepared to discuss. Some engineers spent much time at their drawing boards while others stated all their general requirements to the Chief Draughtsman and others, letting them get on with the job. J. C. Craven, of the Brighton, designed locomotives in his own attic, in early days at any rate, as well as putting his son and his young men on to it, with the result that the Brighton engines were of staggering variety, ranging from some monstrous frights to such beauties as young William Craven's singles for the special business expresses. But on the Midland, the memorable Kirtley designs appeared during the 'fifties and 'sixties, and into the 'seventies, not right at the beginning.

The object of this book is not, in all respect to an admirable series, intended to be an *A B C of Midland Railway Locomotives* from 1844 to 1923, were such a thing even possible. Such a catalogue, especially concerning early years, might contain many sad *lacunæ* and much conjecture. Such early numbering as is known is contained in Baxter's article mentioned already. The influx of large numbers of engines from railways acquired by the Midland always tended to upset Kirtley's system of numbering according to wheel-type, and bewildering renumberings took place accordingly.

Engines thus brought under Midland ownership during 1846

included eight from the Leicester and Swannington Railway, and four new 2–4–0s which had been ordered by the Leeds and Bradford company during its brief independence. From the Birmingham and Gloucester Railway came several single "express" engines, by Tayleur and Forrester, the former 4–2–0 with 6ft. driving wheels. McConnell's *Great Britain* tank engine used on the Lickey Incline, and eleven of the Norris type 4–2–0 engines. The Bristol and Gloucester contributed eleven broad-gauge engines, which continued to work on their native line until it was narrowed. Further to those which the Midland company inherited, there were five 0–6–0 goods bought second-hand from the North Staffordshire Railway in 1851. Off the North Western Railway from Skipton to Lancaster came ten passenger engines, all probably single-wheelers, and four goods. Ahrons, in *The British Steam Railway Locomotive from 1825 to 1925*, illustrates an example from this railway in a pretty little inside-cylindered, inside-framed passenger tank engine, built by Fairbairn in 1850. This engine and her sisters worked the ordinary light passenger trains to Lancaster and to Morecambe in pre-Midland days, and though very diminutive, were notable in having solid welded plate frames. Cylinders were only 9½in. in diameter by 15in. stroke, and the driving wheels were 5ft. in diameter. Similar engines went to Ireland, and in a larger version they worked much of the traffic on the Dublin, Wicklow and Wexford Railway, as far as Bray, for many years.

The first locomotive to work in Brazil, the *Baroneza*, built by Fairbairn in 1852, was almost identical with the "Little" North Western engines, apart from the wider gauge and about 1¾in. on the cylinder diameter. The gauge difference would have presented no problems; the design could have been adapted to the 7ft. gauge if necessary. *Baroneza* has fortunately survived as an historical relic, and also figures in the emblem of the Central Railway of Brazil. She serves us here to illustrate the appearance of the "Little" North Western passenger tank engines, as originally built. Superficial differences include the shape of the sandboxes which were separate from the splasher on the N.W.R., instead of being combined. On the "Little" North Western engines, Ahrons showed a Y-shaped double step, while *Baroneza* had this strengthened into a delta shape. In Kirtley's time, certain of the N.W.R's Lilliputian locomotives were rebuilt and employed on various remoter branches of the M.R.

New Midland locomotive construction, then and for many years to come, was confined to 0–6–0 goods engines, 2–2–2 expresses, and some 2–4–0 ordinary passenger. The last-mentioned type was later to become extremely common, and certain examples were to achieve extraordinary longevity, like some of the goods engines. Certain of the exceptions to the three-type rule, and one unique

experimental engine which ran trials on the Midland, deserve mention in their turn. Many locomotives were obtained from Kitson, Thompson and Hewitson, and were generally of that firm's contemporary standard types. They were of distinctly ornate appearance, especially as to chimney caps and dome casings, though from 1849 onwards Kitsons went to the other extreme, and initiated the smooth, plain engine, with round-topped dome and closed splashers, which was to be recognised the world over, during the succeeding hundred years, as the characteristic British steam locomotive. Kirtley took up the outline in his own designs, so that during the 'fifties and 'sixties, what were then modern locomotives of the Midland Railway had a notably Kitsonian look about them.

The notoriously unsteady long-boiler type of locomotive, with all wheels in front of the firebox, sponsored by Robert Stephenson and built by several other firms during the eighteen-forties, had its representatives on the Midland. A Kitson "long boiler," built in 1845 for the Midland, was illustrated in *The Engineer* of November 23, 1923, and may be briefly described as representative of a larger specimen of this unpleasant design. It had 15in. by 22in. cylinders, 5ft. 6in. driving wheels and a wheelbase of only 11ft. 3in. under a boiler barrel 13ft. long. Total heating surface was 874 sq. ft., and working pressure about 65lb.

In 1848, Kitson, Thompson and Hewitson delivered two very remarkable 4–2–0 Crampton express engines, of a variety not, as far as the author knows, repeated for any other railway. They somewhat resembled what came to be known as the French Crampton type in having double frames, with the cylinders and valves supported between inner and outer frames, but the driving axle at the rear had outside bearings, with return cranks to the axleboxes. The intermediate carrying wheels had inside bearings only. The valve gear was inside, and some drawings suggest that it was of Dodds' wedge type, which was certainly used on some early Midland engines. The very deep outside frames gave the engines a peculiarly massive appearance, which the low-pitched boiler, common to the Crampton patent engine, rather emphasised. There was a vague resemblance to a battleship of later Victorian years, having a very low freeboard, quaintly accentuated in these locomotives by the tall chimney and the dome having a high bell-mouthed funnel extension to the safety-valve casing on top. Kitsons had not yet abandoned their earlier convention of ornateness. Driving wheels were 7ft. in diameter, the largest yet used on the Midland Railway; cylinders were 16in. by 22in., and total heating surface 1,062 sq. ft. The grate area was small—Cramptons had short, narrow fireboxes—and amounted only to 13.9 sq. ft. The pressure was certainly no higher than it ought to have been; indeed, low pressures were probably a principal reason for the general

failure of Crampton engines on British railways. In France, relatively high pressures were introduced, and Crampton engines gave excellent service, especially on the Eastern Railway. They were fast runners, though rough. The low centre of gravity did not help in this respect.

The two Kitson Cramptons received Midland Railway Nos. 101 and 102. Their careers in their original form were short and possibly sad, for the reasons given. Further to these, the return crank arrangement, not used on other Crampton engines, probably gave continual trouble. Mr. Baxter records that they were given the numbers 230 and 231 in a renumbering carried out in 1852, and points out that, according to Kirtley's system of numbering locomotives according to type, this probably meant that they had been converted into 0–6–0 goods.

In general, Kirtley favoured the ordinary 2–2–2 express locomotive, with the trailing carrying axle behind the firebox, which was the characteristic British single-wheeler of mid-Victorian years. Cylinders were inside and frames double, with four bearings to the driving axle. But in 1847 there appeared from E. B. Wilson, of Leeds Railway Foundry, a design which was to be a very famous prototype indeed, the Jenny Lind, with mixed frames and inside bearings only to the driving axle. The original *Jenny Lind* has been claimed for several companies, including both the Midland and the London, Brighton and South Coast Railway. David Joy, who was the boffin at Wilson's, was largely responsible for the design. He stated in his *Diaries* that the " first Brighton engine was called ' Jenny Lind ' after the famous singer." The design was based on that of John Gray, who was successively on the Hull and Selby and on the Brighton lines. Gray's engines were the first mixed-frame 2–2–2 design to have inside bearings only to the driving axle.

However, whatever the claims of the Brighton company, the Midland ordered engines of this type at once, the first Brighton engine having been tried out on the old North Midland line, where it greatly impressed Mr. Kirtley. It is possible, and has been suggested, that the first Midland example also briefly bore the name *Jenny Lind*. Naming was not part of Kirtley's conventions. The original Jenny design had 6ft. driving wheels, cylinders 15in. by 20in., with Stephenson link motion, and 800 sq. ft. of heating surface. It was a fine free-running engine, and steady at speed, in spite of the low centre of gravity. This last was a shibboleth of the period, only to be destroyed by McConnell on the London and North Western Railway. But the secret of " Jenny's " fine performance, in her numerous materialisations on the Midland and elsewhere, was the use of a relatively high pressure, 120lb. per sq. in., proposed by James Fenton. Daniel Gooch on the Great

Western believed in high pressure, and Sturrock on the Great Northern, who, like Crampton, came from Swindon, spread the good work, but many railways were very much afraid of what they clearly regarded as increased bustability.

The first Midland "Jennies," Nos. 21-40, were identical with the Brighton engine, and of these Nos. 21 to 34 were delivered by Wilson's in 1847. They were pretty engines, in the old ornate style, with capped chimney and fluted classical casings to dome and safety valve. As it is sometimes believed by students of locomotive history that these showy casings were entirely of brass, it should be mentioned that only the tops were polished, in either brass or copper, and that the fluted barrels were of painted cast iron. There was no cab, not even a spectacle plate. Joy has described some wild rides on engines during this period, one in which E. B. Wilson and his friends were all packed on the small, blowy footplate. He virtuously remarked that there was not a sober man on the footplate save himself, who had only had the best part of a bottle instead of two bottles. Under the circumstances, a quartern of rum might have been more beneficial, if less fashionable, than a quart of claret.

The Midland Railway and its constituents extensively used Sharp, Roberts and Company's famous designs, both the "Sharp Standard" and the "Sharpie" or "Little Sharp." A new, large Sharp design of express engine was obtained by Kirtley in 1848. There were 13 of these built in that year, and on account of their comparability to the Wilson singles, they were known on the Midland as "Jenny Sharps." The driving wheels were smaller, 5ft. 6in. in diameter, there was 919 sq. ft. of heating surface, and the cylinders were 16in. by 20in. The working-order weight was, however, less—21 tons 9 cwt. without tender—compared with *Jenny Lind's* 24 tons 1 cwt. The tenders weighed 12 tons 11 cwt. (Sharp) and 15 tons 13 cwt. (Wilson). The "Jenny Sharps" were of plainer appearance than old Sharp designs, with an unadorned round-top dome on the middle ring of the boiler barrel. There was a strong flavour of Kirtley's subsequent practice about the design, and henceforward the Kirtley stamp was to remain apparent in most Midland engines until the early 'seventies.

Ahrons inclined to give Kirtley the credit for reviving the long-wheelbase 0–6–0, first essayed by the Leicester and Swannington Railway, and destined to become the typical British goods engine, though it was built simultaneously by B. Hick for the Birkenhead Railway. That was in 1848. The Midland examples, and some identical engines built for the old Leeds and Thirsk Railway, were built by Kitson, Thompson and Hewitson, and were more modern in arrangement than Hick's, which were among the last British

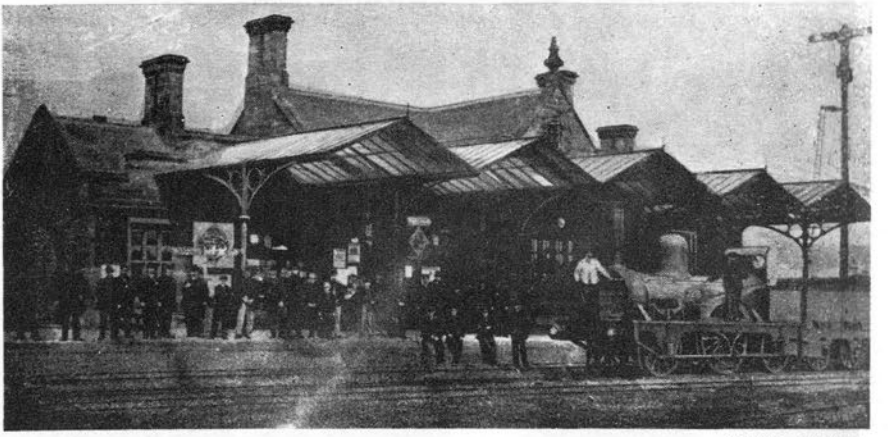
main-line engines to have the old gab gear. The Kitson-Kirtley goods had inside frames, Stephenson link motion, and boiler with dome on the middle ring and a raised semi-cylindrical steam space over the firebox, surmounted by a manhole cover and whistle. Leading dimensions included 4ft. 9in. wheels, 17in. by 24in. cylinders, and 1,001 sq. ft. of heating surface. A curious feature, a practice of Kitson's at this time, was the use of the actual firebox plates below the platforms as integral parts of the main frames, the frames proper being bolted thereto in front and behind. It was not a good arrangement, inviting troubles from expansion and contraction according to temperature. Boiler mountings were probably late examples of Kitson's ornamented type. The regulator handle was of a hooked shape, like handles on the South Eastern Railway engines in Cudworth's time.

Of Midland engines at work at the end of 1848, Baxter gives the following summary: Nos. 1-87, 2–2–2; 90-99, 0–4–2, to be replaced by 2–2–2; 100, 2–2–2; 101-102, 4–2–0 Cramptons; 107-119, 2–2–0; 120-159, 2–4–0; 160-226 (which he qualifies as "approximately") 0–6–0; and 230-301, embracing oddments and obsolescent types.

Engines had their wheel arrangements changed, and their numbers in correspondence, with a facility daunting to the student of a later day. We have already noticed the curious fate of the two Cramptons in this respect; 2–4–0 became 0–4–2; or 0–6–0, or 2–2–2—in fact, axles and wheels were juggled about in what seems to have been almost a light-hearted manner. Deserving of record is the old North Midland single No. 1, which was replaced by a new No. 1 in 1848. She was renumbered 100, immediately before the two Cramptons, then being delivered, and lingered on until 1850. Ten years was a good life for a locomotive during this phase of rapid development and obsolescence. Nobody could have guessed at the extraordinarily long careers which were to be given to many of Kirtley's engines.

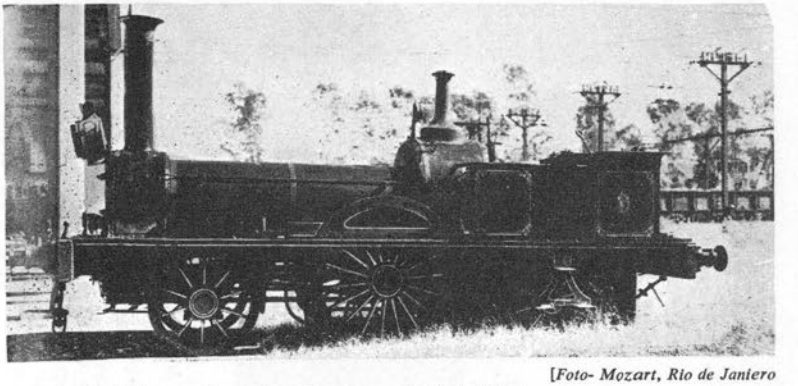
The greatest need at the beginning of the 'fifties, with the continual expansion of coal traffic, was for more and more 0–6–0 goods engines, and during the years 1850-51 Kirtley ordered fifty of these —twenty from Kitson's, twenty from Stephenson's, and the remaining ten from Hawthorn's.

A discursion is deserved by the Crampton engine *Lablache*, previously mentioned in passing, for although Kirtley did not buy her, she underwent quite extensive trials on the Midland Railway, like other locomotives turned out by the same builders, E. B. Wilson and Company. *Lablache* closely followed *Jenny Lind*, being named after a celebrated basso profundo, just as the latter was



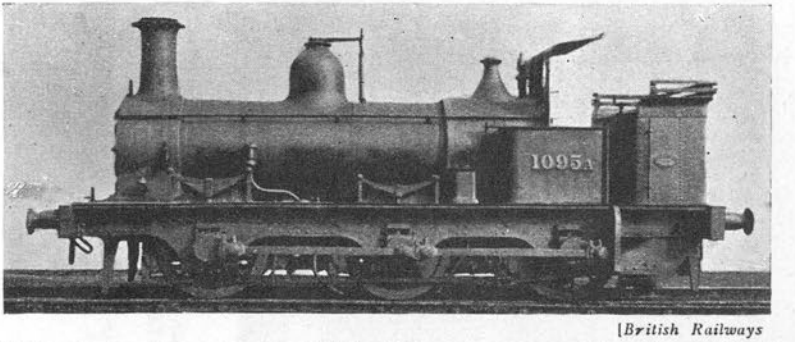
[*British Railways*

A characteristic Midland station scene, some time between September, 1867, and September, 1868, with Jenny Lind type engine No. 728 (old No. 8; Matthew Kirtley, 1855)



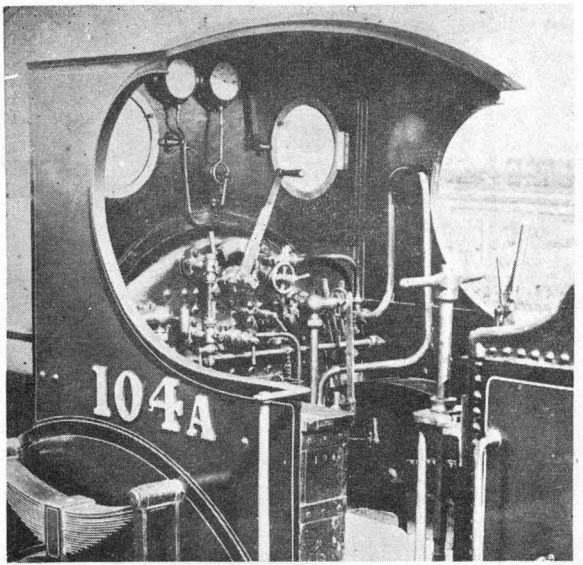
[*Foto- Mozart, Rio de Janiero*

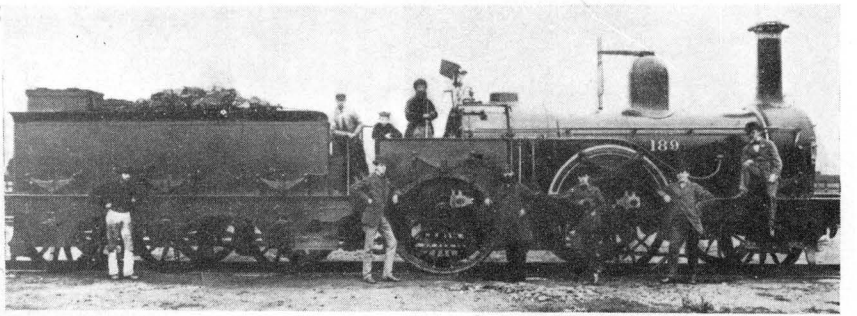
This old Fairbairn tank engine, *Baroneza*, built in 1852 and now preserved by the Central Railway of Brazil, is almost identical with the passenger locomotives of the "Little" North Western Railway, 1850.

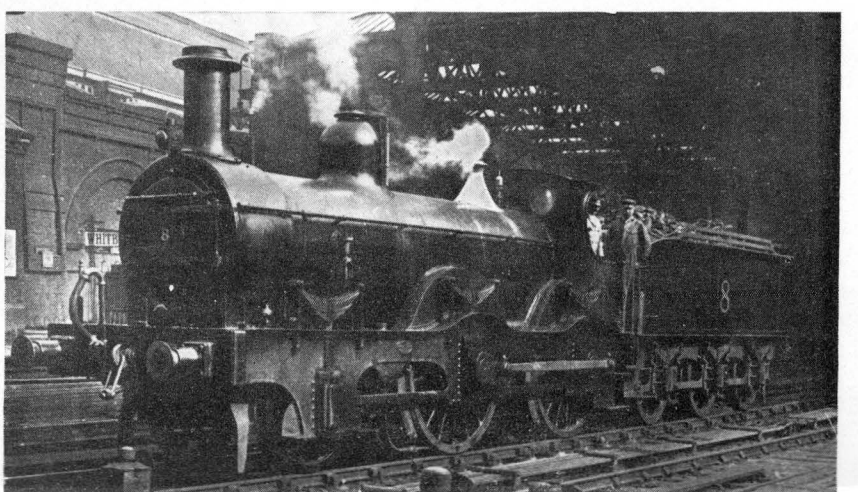


[*British Railways*

Well-tank shunting engine No. 1095A. This was a very considerable rebuild of No. 728, shown in the uppermost figure; originally No. 8 built in 1855, she ran as a tank engine from 1875 to 1920.







Above: Cab arrangement of Kirtley 2-4-0 locomotive No. 104A during S. W. Johnson's time, with boiler of May, 1882. This engine ran until 1932, latterly as No. 6.

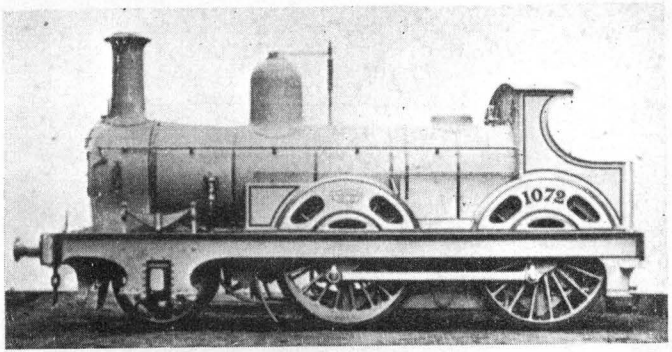
[*British Railways*

Right upper: Matthew Kirtley's 6ft. 2½in. 2-4-0 engine No. 189, as originally built by Beyer, Peacock & Company in 1867, and incorporating that firm's variations in design.

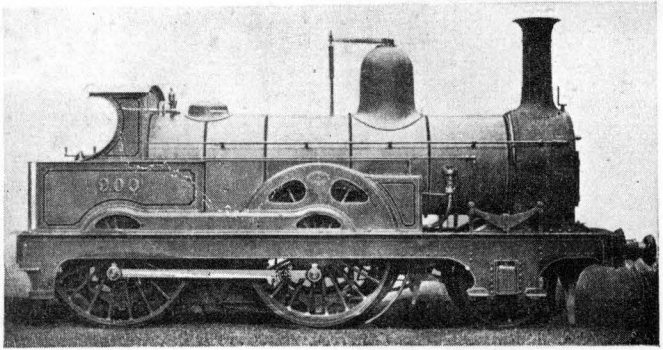
[*From the collection of George Dow*

Right lower: Kirtley 2-4-0 engine No. 8, originally built in 1866, standing at New Street Station, Birmingham. She has Johnson's boiler, cab and tender, and Deeley's chimney and smokebox door.

[*British Railways*



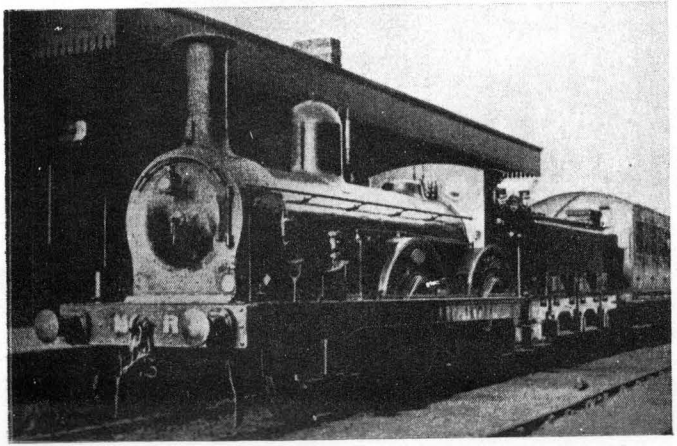
Above: Matthew Kirtley's posthumous 2-4-0 engine No. 1072, built in 1874. [*Sharp Stewart official photograph*

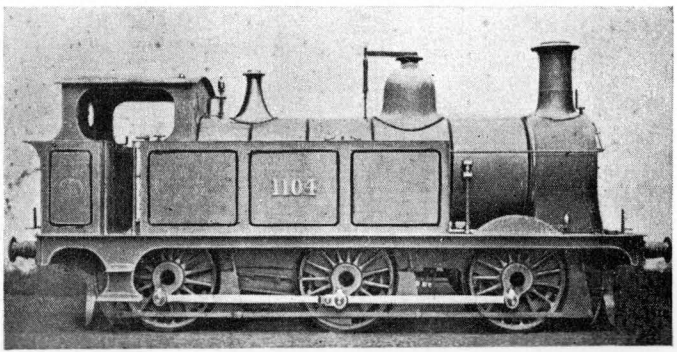


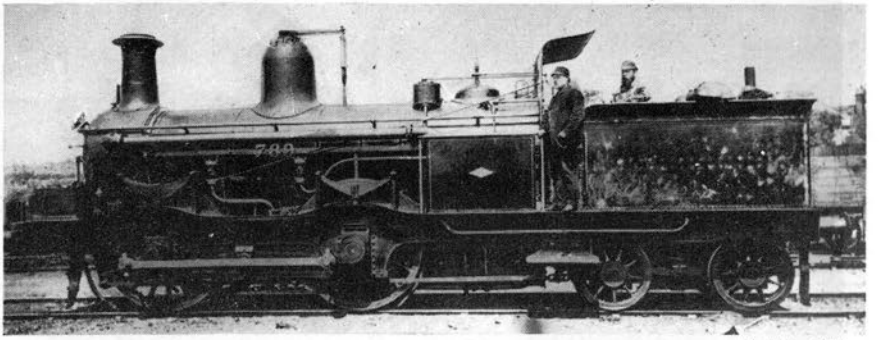
Above: Matthew Kirtley's 890 class express engine No. 900, as originally built. [*Neilson's official photograph*

Below, left: Kirtley 2-4-0 passenger engine No. 1038, with old Clayton coach. [*Locomotive Publishing Co., Limited*

Below, right: S. W. Johnson's standard goods tank engine No. 1104, as originally built. [*Neilson's official photograph*

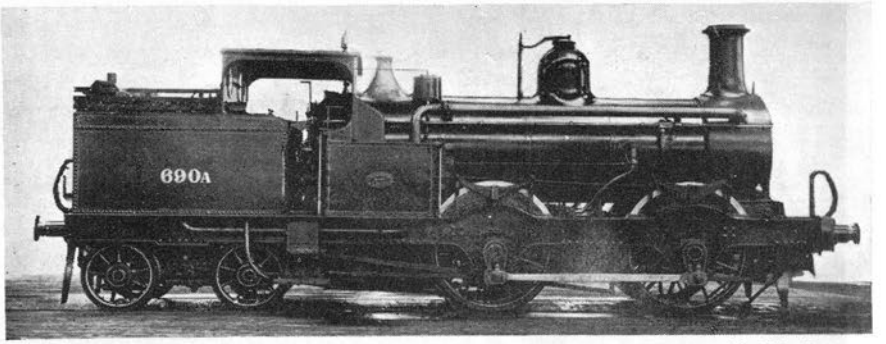






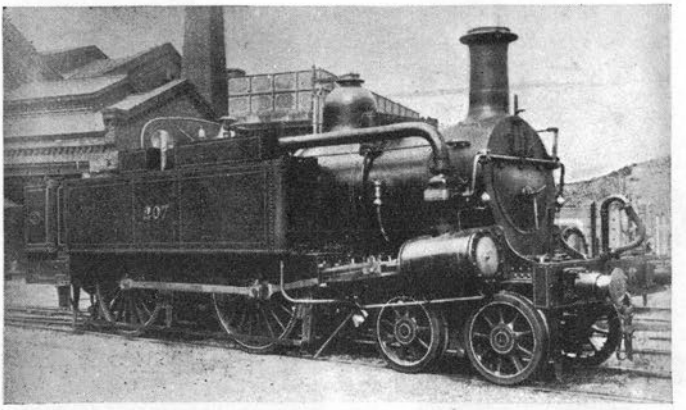
[*British Railway*

Matthew Kirtley's 0-4-4 condensing tank engine No. 789, as originally built by Dübs and Company in 1870. She was renumbered 1215 in 1907, became a service locomotive in 1924 and was withdrawn in September, 1932.



[*British Railways*

Matthew Kirtley's 0-4-4 well-tank engine No. 690A, as running with new boiler in 1890. Built by Beyer, Peacock and Company in 1869, she became No. 1200 in 1907, and ran until 1928.



[*British Railways*

Metropolitan type 4-4-0 condensing tank engine No. 207, built by Beyer, Peacock and Company in 1868, as reboilered by S. W. Johnson in 1888.

named for the famous Swedish soprano. Nothing like *Lablache* was built before or since, but in marine parlance this might have been described as a side-lever engine.

Lablache was an 0–4–0 express engine with 6ft. wheels (Zerah Colburn gave 6ft. 6in. and Joy 7ft.), driven by an intermediate oscillating shaft. Theoretically, she was the perfectly balanced locomotive, and Joy described a half-size iron model at Railway Foundry which could be spun round when mounted loose on trestles without disturbing the balance. But the turns of the outside cranks could not be exactly synchronised, and in consequence the side levers had to be made in two pieces to allow a slight amount of " give " to each oscillation. In common with ordinary Crampton engines, the firebox was in front of the rear driving wheels. The boiler was of oval section, with internal cross-stays, and on it were two domes, a large one on the middle ring and a small one over the firebox, each surmounted by a safety-valve, spring-balance-loaded, and covered by particularly massive and ornate examples of Wilson's composite fluted casings.

This remarkable engine, on trial, was credited with a maximum speed of 70 m.p.h., but the makers, and no doubt T. R. Crampton himself, were at pains to show that she was not only a fast runner but a tremendous hauler. In consequence, the enginemen screwed down the spring balances as far as they would go. Joy had a look at the engine when she was obviously ailing as a result of her trials. " I found," he wrote, " the two top rows of firebox stays drawn in sufficiently to make a rose of spray from each. No wonder that they brought her back to the station, saying she would not steam! If she had not got this relief, and damper, she would have blown her firebox crown out, and killed every man of them."

So the career of *Lablache* was ended by a locomotive's equivalent to peritonitis, but it might have been worse. One wonders what had led to the sudden apotheosis of Dr. Church's unlucky tank engine at Bromsgrove, some years before, and hazards a guess that there may have been curious preparations for ascending the Lickey. The ultimate fate of *Lablache* was a come-down. E. B. Wilson took her back to Railway Foundry and reduced her still useful components to the making of an ordinary 2–4–0. She ended her career ballasting for a contractor. Unlike some unorthodox engines, she undoubtedly " went," and it was a pity that, as Joy remarked, too much was demanded of her, so that she suffered abuse. Sixty-one years were to pass before the Midland system was again to know such a manifestation of the mechanical weird, in the shape of the Paget locomotive. That, however, unlike *Lablache*, was truly a Midland experiment, as we shall see.

By the early 'fifties of last century, the Midland Railway had left its Dark Ages. Hudson was gone, a greasy old man with a charitable annuity of £500 a year, and, mighty well treated at that, bad cess to him! The company was safe under the Ellis succession, John and eventually Edward, just as the time when its neighbour, the London and North Western, embarked on a more than ordinarily ruffianly phase of its history under Mark Huish. Matthew Kirtley was rising to his prime, and to the production of some of the best locomotives, relative to their period, that we have ever known, engines which far outlasted their maker's life and were, some of them, to see their parent nation through two of the most destructive wars in world history (or in English history since the Battle of Worcester).

The Midland's Crowning Mercy, however, had been the Battle of Gloucester (1846)

Chapter Three

MIDLAND PROPER

IT cannot be said that the Midland Railway's express trains were prodigiously fast in its early days. In the 'forties, the Great Western Railway ran by far the fastest trains in the world, on the broad gauge, with the standard-gauge railways some way behind and headed by the London and South Western. Even these two lines showed a sad falling off as the years advanced and the battle of the gauges became a thing of the past. Of the principal railways in 1845, the only ones *slower* than the Midland were the South Eastern and the Eastern Counties. The fastest train on the Midland proper in that year was the down express on the Midland Counties line, which covered the 49½ miles from Rugby to Derby in 1 hr. 40 mins., or at an average speed of 29·7 m.p.h., with one stop. The engines used were probably the 2–2–2 expresses Nos. 45-50. Things were better on the Bristol-Birmingham service, just before the Midland company took it over. In both directions, the 90¾ miles were run in three hours, or at 30·2 m.p.h., which, considering the fact that there were four stops, including the break-of-gauge one at Gloucester, *and* the negotiation of the Lickey Hills, was distinctly creditable. Be it remembered that at Gloucester, every passenger and every article of luggage, and frequently several horses and carriages, would have to be shifted from one train to another.

The night mail to Scotland was booked at 25 m.p.h. over the Midland between Rugby and Normanton, where it was handed over to the York and North Midland, in connection with the Great North of England. Average speed from London to Gateshead was 25·8 m.p.h. The connecting mailcoach from Gateshead to Edinburgh had an average speed of 9·6 m.p.h. when it ran to time. Under Midland ownership there was a sad falling-off with the West of England main line. In 1847 half an hour was added to the time of the best trains. In 1848 it was cut to 3 hrs. 10 mins., but early in 1852 it was as much as 3 hrs. 35 mins. There was a brighter sparkle, though not lasting, on the main line in 1848, when the best down trains ran from Rugby to Derby in 65 mins. for the 49½ miles, and in 1 hr. 55 mins. from Derby to the old Hunslet Lane station in Leeds (72¾ miles). Average speeds, including stops, were thus over 45 m.p.h. and just under 38 m.p.h. respectively. The engines used on the fastest trains were probably the Jenny Linds, then quite new. The two Cramptons may have been employed, though they were unreliable with heavy trains, and these particular specimens, though they may well have lived up to the Crampton's reputation for fast running, were probably liable to run hot, with their fussy arrangement of bearings and heavy "skirts." As we

have seen, they appear to have been rebuilt as goods engines when still quite new. In 1849 the new Wellington station at Leeds was opened, adding a mile to the distance from Derby. Apparently to make up for this, five minutes were added to the times of the express trains from the South.

So far the Midland, although a great railway by the mileage standards of the time, must still regard itself as a provincial railway. It served the cities of Birmingham, Leeds and Gloucester, Sheffield, Nottingham and Leicester, and it had its own private metropolis in Derby, which was always to be regarded as the centre of the system. But for access to the capital, it remained dependent on the London and North Western, and however cordial its relations might be on the surface with the formidable Captain Huish, the latter would see to it that, so far as lay in his power, the Midland remained a provincial railway. Congestion between Rugby and London was dire. But there was a new fighter in the field, in the shape of the Great Northern Railway. After fierce Parliamentary fighting, this had begun in an unassuming way among the Lincolnshire turnip fields with a fourteen-mile appendage of the Manchester, Sheffield and Lincolnshire Railway, putting the quiet town of Louth on the map. The first open section of what was to be its main line was one of 4½ miles from Doncaster to, as Edmund Denison described it, "a ploughed field," in fact, Askern Junction on the Wakefield, Pontefract and Goole (Lancashire and Yorkshire) Railway.

By 1850, the Great Northern was at Maiden Lane temporary terminus in London, and two years later Kings Cross was completed and a considerable gap closed between Peterborough and Retford. So now there were two northern main lines out of London, and neither of them belonged to the Midland company. But at least Ellis could play off one against the other. Early relations between Midland and Great Northern were not entirely affectionate. On August 1, 1852, the Great Northern ran its first train to Nottingham, over the old Nottingham and Grantham Railway, and the Midland took swift action by capturing the G.N.R. engine and locking it up in one of their own sheds, where it remained for several weeks. The Midland had no right to do this at all, but the ensuing row ensured that a jolly time was had by all the lawyers.

As we have seen, the following year saw an attempt by Midland, North Western and Great Northern to get together in magnificent union, which was defeated by Parliament. But the Midland was determined not to be tied to the North Western at Hampton and Rugby, and began to extend southwards on its own account. This was by the Leicester, Bedford and Hitchin line, built by the famous contractor Thomas Brassey, and opened on May 8, 1857. The

great John Ellis was old now, but his memorable chairmanship of the Midland Railway Company lasted just long enough for him to run his first through trains to Kings Cross, on February 1, 1858.

It was a triumph, but not altogether a comfortable one. The double track into London from Hitchin, with its numerous tunnels, and the combined traffic of two major railways, was soon in a highly costive state, and, as might be expected, on the Great Northern Railway the Great Northern train got the road if there was any question of priority. There was *always* question of priority. The piling up of Midland traffic, especially of coal trains, between Bedford and Hitchin, assumed terrific dimensions. So the Midland company undertook the extension of its line to London independently.

The final source of irritation was something which took place in 1862. During that year, 3,400 Midland trains were delayed by Great Northern traffic between Hitchin and Kings Cross, and on June 30, so great was the pile-up of carriages and wagons at the London end that some brilliant character in office on the G.N.R. tried to sort it out by declaring that only Great Northern rolling stock could be accommodated on the Kings Cross sidings until the situation eased. The resulting confusion beggared imagination, and there was utter chaos in the movement of both companies' traffic. The Midland company's Act for its London extension was obtained in the following year, and the line was undertaken by W. H. Barlow. But through the middle 'sixties the ferocious overloading of the Great Northern line continued, and there was another case of complete dislocation, though different in nature from that of June 30, 1862. On the night of June 9-10, 1866, a down Great Northern goods train failed in Welwyn North Tunnel, owing to the engine collapsing a tube. The following train was a down Midland goods, which ran unchecked into the rear of the Great Northern, blocking both roads with the wreckage of wagons through which the Midland engine had ploughed. Before it could be stopped—indeed, before many people realised that anything was wrong in the tunnel—an up Scotch perishable goods train of the Great Northern rushed at full speed into the tangled mass of wagons and Midland locomotive, packing the tunnel with debris from rails to the top of the arch, which at that point was pierced by a ventilating shaft. Spilt coals from the fires of the derailed locomotives set fire to the wreckage; tunnel and shaft formed a ready-made furnace on a gigantic scale. The up Great Northern train was loaded with fresh meat for Smithfield. All through the next day the blaze went on, the shaft top vomiting smoke on the hill slope, while all around the scent of summer hedgerows was drowned by that of beef and mutton roasting together. The fiercest of hot-gospellers could not have found grander inspiration for the material parts of an old-fashioned hell-

fire sermon. It was indeed fortunate that no passenger train was involved in this, probably the most destructive collision that had yet occurred in British railway history. The worst accident in respect of fatalities up to that time had been the collision in Clayton Tunnel on the London, Brighton and South Coast, in 1861, which killed 23 persons. The Midland Railway, indeed, had been remarkably free from serious accidents to trains so far.

Construction of the London extension from Bedford was complete by the summer of 1868, though the great terminus at St. Pancras was not ready until October 1. Midland traffic to Somers Town goods, and connection with the Metropolitan Railway via the Kings Cross Tunnels, began on July 13.

Barlow and Sir Gilbert Scott were jointly responsible for St. Pancras Station, which was immediately acclaimed as the most magnificent terminus Londoners had yet seen. Scott had lately achieved fame with the new Foreign Office, for which he had prepared two designs, one Victorian-Gothic and the other, which was adopted, Victorian Renaissance. It has been unkindly though inaccurately said that, having provided Her Majesty's Principal Secretary of State for Foreign Affairs with a *palazzo*, he sold the Midland Railway his Gothic design, off the shelf, for use as a railway station and hotel.

Proudly rose that vast Gothic pile, as someone reverently called it, flamboyant and tremendous beside the Cromwellian dignity of Kings Cross next door. Its great clock glared across at the Kings Cross clock over the way, its spire aspired to the clouded London skies, amid a company of steep roofs and pinnacles. The main booking hall was a mighty ante-chamber to the mightier place beyond, full of steam and the mingled reek of Midland coal and lamp oil. The great hotel received its guests in surroundings of opulent splendour. Glittering lustred gasoliers shed their hot radiance over marble, and heavily gilt plaster, over brocade and buttoned-in velvet. Thousands of feet fell silently in its endless, thickly-carpeted corridors, which were suffused by a crimson twilight from half-veiled Gothic windows. The very *necessaria* were splendid in mahogany and decorated Staffordshire ware; the kitchens would have done credit to any royal palace.

St. Pancras Hotel contains only offices now, but gigantic pieces of mahogany furniture yet loom in shadowy places, and on some floors there are still the remains of carpets that once were brushed by sweeping lace and pressed by elastic-sided boots. Now your author once lived, through five years, in an old house that was in certain respects *queer*, and in schooldays he was at Westminster, which has at least three ghosts—one of them Her Majesty the First

Elizabeth. But somehow he finds the corridors of St. Pancras quite eerie by comparison, and provided the night were warm he would rather see the night hours round in the South Cloister with the shadowy Gloriana for company.

There was never anything fanciful about Barlow's part of St. Pancras. To this day it remains a masterpiece of structural engineering. About half a mile north of the terminal site, the line had to cross the Regent's Canal, so Barlow was faced with the alternatives of diving under it and having a low-level station, or bridging it and having a station on arches or their equivalent. He chose the latter for the main line terminus, with the result that the passenger platforms and roads are on the upper floor of the station. Below is a warehouse, which was specially designed to contain the immense quantities of Burton beer which the Midland Railway was to bring to a thirsty capital. W. J. Gordon wrote in *Our Home Railways*: "This was the ruling element in the design, for the 720 supports had to be 29ft. 4in. apart, that being the distance found to allow of the largest number of barrels being placed between them; and, as the superstructure had to be built to suit the supports, the unit of the whole fabric was really a barrel of beer." The great roof of the station, of 240 ft. span, itself meets in the middle in the form of a much depressed Gothic arch; the roof girders plunge down far below the level of the tracks on each side. Of its kind, it is one of the most beautiful roofs in the world.

Below the bonded stores are the underground tracks connecting the Midland line from Kentish Town to the Metropolitan, and below these again, in its great culvert, runs the ancient Fleet River. When St. Pancras was built, it entailed clearance of one of the worst slums in London, a noisome area whose best spots were a fever hospital and an old cemetery. The dead were disturbed as respectfully as possible and reinterred elsewhere, but, according to a persistent legend, the relatives of a deceased Frenchman claimed his remains. The grave was found to contain the bones of two persons, well mixed up through disintegration of the coffins. The head digger gave the ingenious ruling that as the particular departed was foreign, he had probably been a darkish gentleman. So the most blackened of the bones were made up into a reasonably correct skeleton, recoffined, and sent to France, where they returned to their native soil amid the most solemn of *pompes funèbres*. There was another queer consequence of the Midland slum-clearance, and that was the disturbance of numerous household cats. Now the cat is a worthy, dignified animal that will not be pushed around. Instead of allowing themselves to be taken away and installed in new model workers' dwellings, these cats took possession of the railway works. To this day their descendants live in the precincts and catacombs of St. Pancras Station, quite wild, slayers of rats, eaters of mice,

and therefore welcome as permanent guests. In gaunt yard and under reverberating platform they have their disputes and sing their terrible love-songs; down amongst the beer casks they bring forth their wild kittens.

Contemporarily with its London extension, the Midland Railway drove for Manchester, by continuing the old Ambergate and Rowsley line. It was the nearest approach the company had yet made to building a mountain line, though there had been a foretaste at Matlock. Up through the great limestone hills it was thrust, traversing and piercing the rocky flanks of the valleys, standing out across the rivers on noble viaducts. This was one of the lines that inspired Ruskin's more ferocious diatribes, and before we permit ourselves too superior a snigger, we should remember, firstly, our own private hates; secondly, that the steam railway was Ruskin's particular private hate; and thirdly, that in any case a new railway, or a railway being built, makes a more than ordinarily ghastly wound on the face of the country, however magnificent it may become when it has grown into the landscape. Of the Peak country, Ruskin wrote: "The wide acreage of field and moor above is wholly without interest: it is only in the clefts of it and the dingles that the traveller finds his joy; and in those clefts every charm depends on the alternate jut and recess of rock and field, on the successive discovery of blanched height and wooded hollow; and, above all, on the floriated banks and foam-crisped wavelets on the sweetly wilful stream. Into the very heart and depth of this, and mercilessly bending with the bends of it, your railway drags its close-clinging damnation"

All this, he remarked, was in order that a Buxton fool might be able to find himself in Bakewell, and a Bakewell fool in Buxton, at the end of twelve minutes. Here again one can sympathise. Too often the tripper is a horrid person. If Ruskin had lived long enough to know the more insidious, more penetrating motor tripper, he might have given the railway second place in his hierarchy of abominations.

Buxton was the first objective of the Midland company in its northern push, and the line from Rowsley to Miller's Dale was built during 1862-3. Ahead lay the promised land of Lancashire, but it was by no means a plum for the easy picking. Three railway companies occupied the County Palatine, and Midland aspirations were bound to be regarded as provocative, if not actual warmongering. Now, as various people have shown, from the days of the Kings of Sparta to those of the Cominform, a good way of getting things done to one's own advantage is to encourage disagreement elsewhere. In this case the Midland was faced with the London and North Western, and the Manchester, Sheffield and Lincolnshire

companies, which were most uneasy bedfellows at London Road station, Manchester. Both of these, as well as the Midland, looked proprietorially in the direction of Buxton, regarding the territory between there and Manchester as their own by right. It happened by chance that certain officers of the Midland Railway, examining the terrain, fell in with their opposite numbers of the Manchester, Sheffield and Lincolnshire who were likewise on the snoop. Instead of having a battle on the spot, they got together, and agreed what a good thing it would be to slap the London and North Western. Further, the Midland company had gained the sympathy of influential members of the Manchester City Council and Chamber of Commerce, who looked forward to having a direct route to Derby, Nottingham and Leicester.

As a result, an agreement was made between the Midland and Sheffield companies, whereby the former should have access to London Road station, Manchester, and to other places in Lancashire and Cheshire which the latter company already served. Thus two chance meetings gave the Midland two of its most valuable sections—first the Bristol and Birmingham line and then the entry into Manchester.

The country was extremely difficult, and the obstacles encountered in building the railway were not merely the ordinary ones of construction in mountainous country, bad as those can be. The country of the Peak is hollow. Rivers do extraordinary things, with or even without provocation. The line was taken up Great Rocks Dale to a summit at Peak Forest, just south of Dove Holes Tunnel (one mile, 1,224 yards). Of course, in making the tunnel, one of those underground rivers very shortly turned up and greatly embarrassed the contractor. It was successfully diverted, but after the way of Peak Forest rivers, it turned up again, and wandered about in a most disconcerting manner. Near Bugsworth, when the line was confidently supposed to be finished, a great mass of shale, superimposed on sandstone, began to move. It shifted with it about 16 acres of good pasture land, with a farmhouse, and broke the Midland Railway's new Bugsworth Viaduct, which had to be rebuilt.

The line remains as it was built, though in more recent times the construction of the Dore and Chinley line gave an alternative, slightly longer, route. Peak Forest summit is 980ft. above sea-level. There is a practically continuous rise all the way from Sawley Junction, about two miles north of Trent, to Rowsley, but thereafter the ascent is fierce, and broken only by three short "sawteeth" and a tiny level through Miller's Dale station. Most of the line, for roughly 14 miles between Rowsley and Peak Forest, is at 1 in 100 or 1 in 102, but three miles of the final rise are at 1 in 90.

From the Manchester direction, the climb to Peak Forest is likewise violent, but considerably more unpleasant, owing to the presence of Disley Tunnel, two miles, 346 yards long on a gradient of 1 in 132, and Dove Holes Tunnel with nearly two miles on an incline of 1 in 90. There is scarcely the shortest level stretch from Cheadle Heath to Peak Forest summit, some 16 miles, with seven miles at 1 in 90-91. The most favourable stretches are one of about half a mile which is level, just south of Disley Tunnel, another half-mile at 1 in 200 north of Hazel Grove, and a tiny stretch through Chinley station at 1 in 376.

While on the subject of the Midland Railway gradients, we should look also at the southern main line to London. Observe that, to the Midland mind, it was always *to* London, not from. Derby was the place that mattered. It is an undulating line, with humps all the way, and although not bearing comparison with the Peak Forest line, or the later extension to Carlisle, it made exacting demands on the Midland locomotives. There is a particularly sharp rise and fall between Wellingborough and Oakley, with summit at Sharnbrook, and ruling gradients of 1 in 120 going south and 1 in 119 going north. For the benefit of the heavy London coal traffic, some quite extraordinary deviations were made. The ruling gradient, southbound, was fixed at 1 in 200 for the coal trains, and in consequence the goods roads, double track, were taken quite some distance from the passenger location over Sharnbrook summit, and through a tunnel 1,860 yds. long. There are regular passengers of many years standing who are yet unaware that there is such a thing as Sharnbrook Tunnel.

The provision of separate goods roads, on such a scale and with such differences from the up and down fast lines, is peculiar in this country to the Midland line. There is another deviation north of Kettering, where there is a ruling gradient of 1 in 118 going north, but nothing worse than 160 on the goods lines.

Returning to past history, the Midland service to Manchester, London Road, via Chinley, New Mills and the Manchester, Sheffield and Lincolnshire Railway, began on February 1, 1867, though goods traffic had been worked for some months previously, early enough, indeed, to be disturbed by the upheavals at Bugsworth. On July 1, 1866, the Midland Railway had joined with the Sheffield company and the Great Northern as a partner in the Cheshire Lines, which had been formed in 1865 from a number of local railways. It was not, however, until August 15, 1867, that the Cheshire Lines Committee was constituted with members from the directorates of all three owning companies, while the undertaking remained autonomous as a working railway. Motive power was provided by the joint partners, but not vehicles, except where through services were

concerned. Manchester Central Station was opened on July 1, 1880, though a temporary station had been in use since the extension from Cornbrook on July 9, 1877. Manchester Central became the Midland's terminus, and the company ceased to use London Road for through traffic. The great roof of Central has a certain affinity to that of St. Pancras. The station has never, however, had any sort of a façade, and is one of the most grandly desolate places of the kind in Great Britain. Not that any of the Manchester stations are establishments one might hanker for; perhaps Victoria, legacy of the old Lancashire and Yorkshire Railway, is the most cheerful.

The Cheshire Lines was always a peculiarly individualistic specimen of a joint railway, even though it never possessed anything nearer to a locomotive than a steam rail motor or two. It had elaborate armorial bearings of its own. It was one of the earliest British railways to possess twelve-wheeled coaches (the Midland was the first), and on its native ground it styled itself Cheshire Lines *Railway*. The Railways Act of 1921 might amalgamate Midland with London and North Western, Great Northern with Great Central,* but the Cheshire Lines remained the Cheshire Lines. Under nationalisation it died hard. Even when British Railways had become well established, new carriages were still being turned out at Doncaster, ostentatiously painted in B.R. red, but defiantly lettered C.L.C.!

Reverting once more to the 'sixties of last century, by the end of the decade the Midland Railway had assumed a form which many regarded as complete. It linked the Midlands with the West Riding, with the North West, with the West Country, with East Anglia, and with London by direct routes. In 1869 it reached South Wales by putting the Hereford, Hay and Brecon into its capacious bag and thereby getting access to the Neath and Brecon Railway. In 1876 it acquired the Swansea Vale line. But of its more spectacular doings in that year of 1876, another chapter shall tell.

* The Manchester, Sheffield and Lincolnshire Railway was renamed Great Central in 1897, before the opening of its London extension.

Chapter Four

KIRTLEY'S YEARS

A THING that struck every visitor to the Midland Railway in its last years, and to what had been its system for many years longer, was the apparently enormous number of very ancient locomotives which were to be seen on its trains, both passenger and goods. Yet this was no degenerate, decaying railway with a long history of struggle and bankruptcy. It was not a railway such as the Lancashire and Yorkshire had been up to the end of the eighteen-seventies, looking as if nothing had been built, or even the stations painted, since the close of the Railway Mania. The antique engines were there, doing their work very well. There were no antique carriages.

Matthew Kirtley, having been in command from the beginning until the early 'seventies, had achieved in his time, and without mass-production, something very like modern standardisation, and S. W. Johnson, who succeeded him, believed in rebuilding good old engines so thoroughly and so well as to give them an entirely new lease of life. Thirdly, the Midland did not work its engines to death. The result was such as one found on certain French railways, notably the Paris-Orleans, where, finally, one could see the classic French 2–4–2 express and the Bourbonnais goods side by side with the latest in electric traction at stations like Tours and Bordeaux. In the nineteen-twenties there was nothing odd or unusual in the use of sixty-year-old Kirtley locomotives for piloting the Scotch expresses up to Ais Gill. No time was lost, and the job was done with a great deal more expedition and less fuss than similar tasks in the hands of other people.

Before giving particular examples, some general notes on Matthew Kirtley's practice in locomotive design may be given. It is difficult to state just where, in his oldest engines, the manufacturers' designs ended and his own began; moreover, parts of older engines appeared in some of those early productions. For a long time he perpetuated the wood-and-iron sandwich frames, dating back to Stephenson's Planet and Patentee types, in his passenger engines, but in 1852 and thereafter he built his main-line goods locomotives with outside plate frames. Rectangular tiebars connected the horns. Goods and passenger engines also differed, at this time, in the shape of the boiler. In the former it was flush-topped, but until 1870 passenger engines had raised casings, usually surmounted by a manhole cover supporting the whistle. The dome, in a genuine Kirtley engine, was always cylindrical in a round-top casing, and was latterly on the middle ring in all cases, but in some

engines built by Sharp's, that firm stuck to its own favourite practice of placing it on the first ring. The chimney had a boldly flared bell-mouth top, but in some late examples this was replaced by a cast iron top. Cylinders were always inside; indeed, the only standard Derby-designed main-line engines with outside cylinders that the Midland ever possessed were the Smith and Smith-Deeley compounds built in the early nineteen-hundreds, to which be added, if a class consisting of one Derby-built engine can be called standard, the famous ten-coupled Lickey banking engine.* Throughout Kirtley's time, Midland locomotives were painted a rather deep bluish shade of green. The frames were also green, instead of the red-brown colour common on locomotives of the mid-Victorian years.

Six fine single expresses were obtained in 1852 by Kirtley from Robert Stephenson and Company. They had 6ft. 8½in. driving wheels and 16in. by 22in. cylinders. The boilers, with 1,097 sq. ft. of heating surface, had a closed round-topped dome on the middle ring, with both safety-valves over the raised firebox casing, housed in a rather massive-looking columnar brass casing which was a Stephenson standard shape of that time. This form is more generally associated with old South Eastern locomotives, including the famous Folkstone class Cramptons. These Midland singles had the usual sandwich frames, and were of very symmetrical appearance, with a wheelbase of 15ft. 6in., equally divided between leading, driving and trailing axles. There was no cab, or anything remotely resembling one.

In the following year of 1853, three more lots of single-driver passenger engines appeared, but only the largest of these could be quite dignified as express engines. These were ten by Sharp, Stewart and Company, with 6ft. 8½in. drivers and 16in. by 22in. cylinders, like the Stephensons, but having a somewhat less massive aspect, with lighter frames and no tiebars between the horns. In their original form they had plain closed domes in round-topped polished brass casings on the first ring, behind the chimney, giving them an engagingly perky appearance compared with that of the severe Stephensons. They were originally numbered 120-129, and were used when new on the Birmingham and Gloucester expresses. These engines lasted about twenty years and more. No. 125 went early, in 1872, but No. 122 was rebuilt in 1871 and ran until 1879. No. 128 received a second-hand (1868) boiler in 1875 and ran until 1881; while the last, No. 129, built in 1854, continued a useful existence until as late as 1885, thus having reached the age of thirty-one years. Replacement boilers of Kirtley's design had flush

* Outside this strict qualification came the American goods engines of 1899, the railmotors and the later 0–4–0 shunters.

firebox casings with a plain manhole and cover, and Salter balances to the safety-valves on the dome.

The other single-wheelers of 1853-54 were smaller engines, and were built by Kirtley at Derby, but they incorporated considerable portions of old Jenny Lind type engines previously built by E. B. Wilson and Company at Railway Foundry, Leeds. Of these, Nos. 117-119 had 6ft. driving wheels and 14½in. by 20in. cylinders. The first two came out in 1853 and No. 119 in the following year. They were all three replaced by new Kirtley 2–4–0 locomotives in 1866. No. 105 was a similar engine but with 15in. by 20in. cylinders. She went through several strange vicissitudes. In March, 1867, she was replaced, like the others, by a new 6ft. 2in. 2–4–0 and given the number 725. In September of the following year, Kirtley put her into his duplicate list as No. 1003, but at the time it seemed that this was only the old engine's number in the morgue. In 1871, however, he rescued her and saved her by a severe operation, as a result of which she reappeared before an astonished world as an 0–6–0 goods well-tank, with 4ft. 2in. wheels and 15in. by 22in. cylinders. By this time, the Midland Railway capital list of locomotives encroached on the thousands, so the duplicate list of 1868, beginning at 1,000, was put one-up, and old No. 105/725/1003 became 2003. In the summer of 1877, S. W. Johnson, who by then had succeeded the late Kirtley, gave the old engine a new boiler and restored her to the capital stock as No. 210. She was again (1883) duplicated, and as 210A worked until 1899, having been rebuilt once more in 1896. How much an engine qualifies for definition as a "rebuild" when it has had new frames, new cylinders, new wheels and several new boilers at one time and another (and incidentally six different numbers) is something the present author hesitates to explain, but somehow it was all in the Midland tradition of locomotive longevity. The same sort of thing happened to others, as we shall see, though there came to be many genuine ancients.

Three 6ft. single engines with 15in. by 20in. cylinders were built by Kirtley at Derby in 1854, Nos. 3, 4 and 15. The last-mentioned may have contained parts of an old engine, and was replaced by an entirely new one in 1860. No. 4 went through several renumberings and ended as a 2–4–0, No. 2017 (1873 renumbering) in 1882. The first of the batch went through the six-coupled tank metamorphosis and was broken up in 1904 as No. 216A. These old 6ft. singles, though built at Derby, perpetuated the Jenny Lind type; indeed, Kirtley at Derby, like J. C. Craven at Brighton, that other home of the Jenny Lind, was somewhat given to copying outside designs which had given good service, certainly in his earlier years.

The last of the little 6ft. singles with 15in. by 20in. cylinders

were built in 1855, Nos. 7, 8, 10, 14, 16, 104 (containing parts of a Wilson "Jenny"), 106 and 107, followed by eight more, Nos. 108-115, in 1856. Many of them went through various changes, as to both renumbering and rebuilding, but the palm undoubtedly went to No. 8, one of the first batch. She became No. 85 and then No. 36, all in 1862, 108 in 1863, and 728 in September, 1867. Between that time and September, 1868, when she was renumbered 1006, she contrived to get herself photographed, and about a lifetime afterwards a copy of this ancient portrait came to light. It is peculiarly interesting in showing how closely the small Kirtley single-wheelers resembled the genuine Jenny Lind, even to the arrangement of tiebars between leading and trailing hornplates, with cantilever support outside the driving wheels, which had inside bearings only. Although the driver is proudly standing in a position calculated to obliterate it, the raised firebox casing is just visible in the original photograph, under his right armpit and beyond his left elbow. While the chimney is an early Kirtley design, the resemblance of the outline, as in the dome, to a Kitson engine is clearly shown; indeed, No. 728, as she then was, appeared very like the Kitson "Jennies" on the neighbouring North Staffordshire Railway. The tender, like those of all Kirtleys, had a narrow tank with the springs outside it, above the platform. The picture is further valuable in showing, from that early date, a characteristic Midland station, of Victorian-Tudor style in sandstone with mullioned windows, with the inimitable gabled glass roof. A fine specimen of a Gregory-style signal, with up and down semaphores on a common pivot through a slotted post, graces the background. The scene has been described as Chesterfield, which, however, it does not resemble.

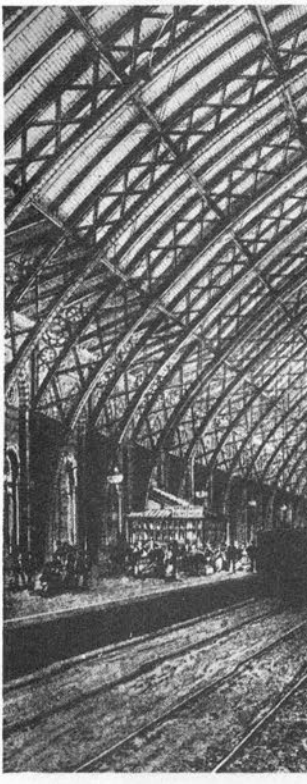
Having had her portrait made, and then a new number given her, the old engine certainly did not fade away. In 1872, owing to the impact on the duplicate list of heavy new construction, as already mentioned, she had 1000 added to her number. She ran as No. 2006 until November, 1875, when Mr Johnson carried out the wonderful Derby rejuvenating process which caused her to become an 0–6–0 well-tank, with 4ft. 2in. wheels and 15in. by 22in. cylinders, renumbered in the capital stock as 1095. In 1884 she received her third duplicate number (this sounds more like Inchicore than Derby, but let it pass!) which was 1095A. In 1894, Mr. Johnson gave her a new boiler, and in the 1907 renumbering of Midland Railway locomotives, she became No. 1603. War is sometimes kinder to engines than it is to men, and when the Versailles Treaty was signed, No. 8/85/36/108/728/1006/2006/1095/1095A/1603 was still around. No record survives of the doings of youthful locomotive spotters in the middle years of last century. This is a pity; Mr. Kirtley's and Mr. Johnson's attitude towards numbers

must have added jolly obstacles to the game. The old engine went the way of other old engines at last in 1920. As her demise was at Burton, one hopes that someone poured a reverent libation, or at any rate downed a quart of Best to bless her venerable shards.

The practice of converting old single-drivers to six-coupled goods was fairly simple, and not uncommon elsewhere. The classic example was Dean's conversion of 21 Armstrong expresses to main-line goods on the Great Western during 1900-1902. This was genuine rebuilding; the old frames were used and the original motion. But it is doubtful whether any important components of the ancient Kirtley "Jennies" really found their way into the six-coupled well-tanks. Another "foreign" instance: in 1864 the North British Railway produced a Jenny Lind type engine out of the remains of their old No. 55, a Crampton's patent rear-driver. If four (out of six) wheel centres and perhaps two out of six sets of spring-hangers constitute a locomotive, that old Crampton, disguised as a "Jenny," ran for 59 years. But only *if*!

In 1856 appeared the first of a new series of 6ft. 8in. single express engines, with cylinders 15in. by 22in. They had sandwich frames and raised firebox casings, externally separated from the boiler barrel by polished brass plates, giving the engines a bright and smart appearance. Nos. 136 and 137 were built at Derby in 1856, Nos. 138-142 in 1857, and Nos. 143-149 in 1858. A further two dozen, Nos. 1-24, were built at Derby during 1859-61, and in some of these, the newer type of flush-top Kirtley boiler was used later. This boiler was also put on Nos. 145 and 149 of the 1858 batch when they were rebuilt by Mr. Johnson in 1875. Both these engines ran until 1885. They had been fitted with 16in. cylinders, as were Nos. 137, 139, 141, 142, 143, 148. No. 141 had a distinguished career of forty years. She was duplicated as 141A by Mr. Johnson in June, 1875, but in 1880 he rebuilt her with new heavy plate frames. Early in the following year he renumbered her 33 and detailed her to the working of the Directors' saloon. In 1892 she was duplicated again as No. 33A, and two years later a Johnson boiler dated 1886 was put on. She was scrapped in 1897. Some of series 1-24 lasted for a considerable time. Ahrons recorded Nos. 8, 11, 16 and 17 working between Derby, Nottingham and Lincoln up to the turn of the 'eighties to 'nineties. All this series had 16in. by 22in. cylinders.

The largest and finest of Matthew Kirtley's single-drive express engines were nineteen which were built during 1863-66, Nos. 25-39, 94 and 97 to 100. They were not numbered chronologically; No. 27 was the last to be built, indeed the last "single" to be turned out at Derby for many years. The raised firebox casing was perpetuated, but in Nos. 27, 29-32, 34, 37, 94 and 97-100 the old



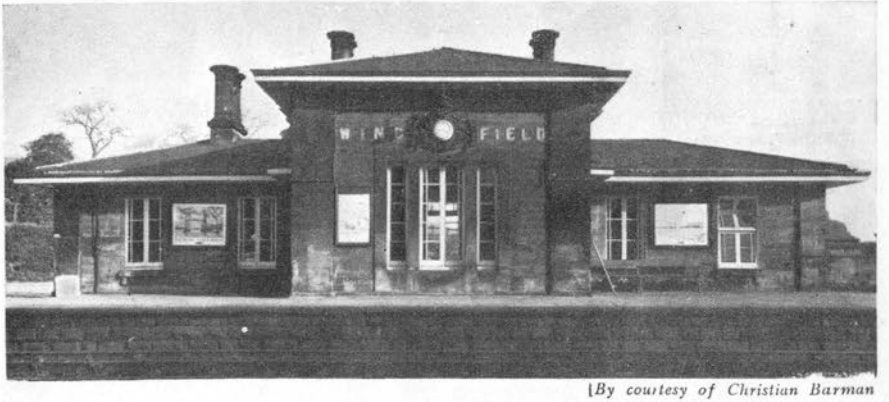
W. H. Barlow's superb roof a

[*British Railways*

Sir Gilbert Scott's tremendous Gothic hotel front and clock tower at St. Pancras, from a photograph taken in 1904, before widening of the Euston Road. Britannia tops the nearest gable.

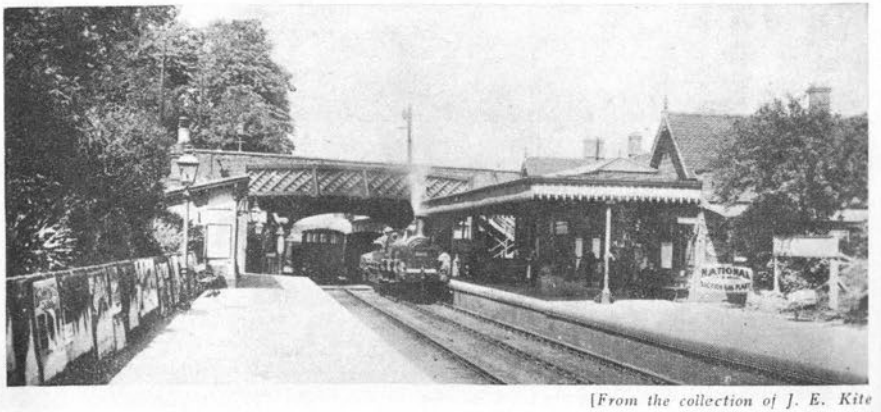
[*From the collection of J. E. Kite*

Trent, characteristic glass-gabled island station. Noteworthy is the starting signal on the platform, left; on the right, a rebuilt Johnson bogie engine heads a mixed lot of Clayton's earlier coaches.



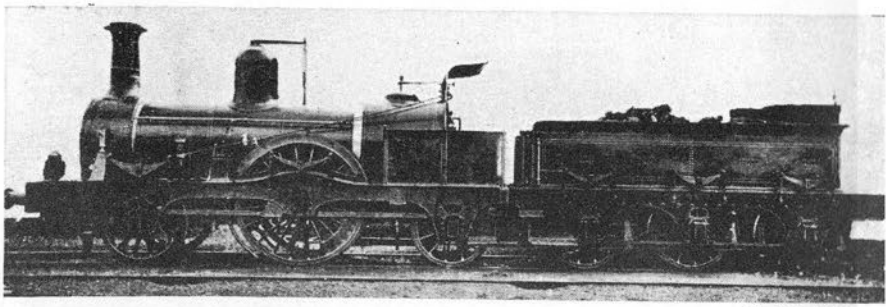
[*By courtesy of Christian Barman*

Francis Thompson's neat pavilion on the up side at Wingfield, a beautiful example of the smaller country stations on the North Midland line.



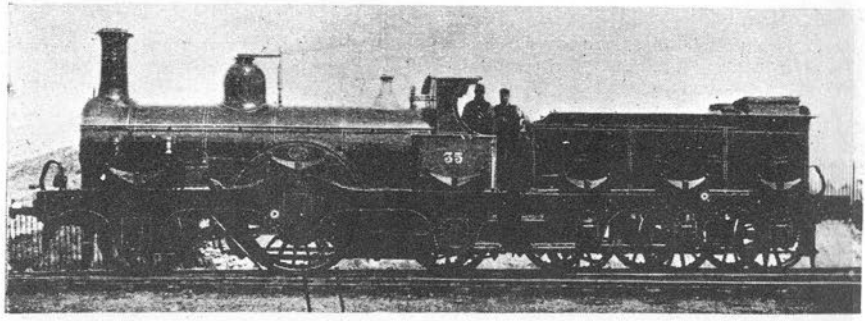
[*From the collection of J. E. Kite*

Redditch exemplifies a country-town station in the West Midlands, with cottage-style station house and umbrella awning with skylight.



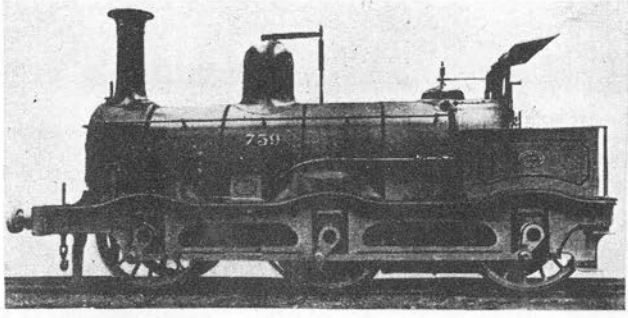
[*British Railways*

Matthew Kirtley's standard single express engine No. 1A, built as No. 1 in 1859.



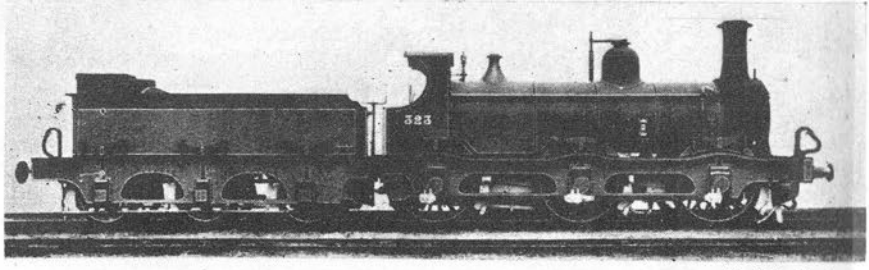
[*British Railways*

Above: Kirtley single express engine No. 35, as rebuilt by S. W. Johnson.



Left: Kirtley goods engine No. 759, built by John Fowler & Company, 1870.

[*From the collection of George Dow*



[*British Railways*

Below: Kirtley standard goods engine No. 323, as rebuilt by S. W. Johnson.

sandwich frames, with tiebars between the horns, were abandoned, and in their place were used deep-slotted plate frames, the lower parts forming the torsion members between the axles. This gave them not only a much more massive and puissant aspect than was then usual on the Midland, but great strength also, for which reason the series refused to wear out and did not become extinct until early in the present century. There was still the barest ghost of a cab; the old-fashioned oblong panel-plate, which was to be perpetuated until Deeley's time, kept the draught off the enginemen's legs, and the sheet-iron weatherboard was bent over to form something of a roof, without side-sheets. One or two had that rudimentary cab roof produced farther back over the footplate and secured to a pair of pillars, following trouble at Loughborough when evil boys dropped a brick from an overbridge, severely injuring a driver. In this form of "cab," the roof sheet would rapidly work loose on the pillars, when it violently vibrated, producing so terrible a tintinnabulation that the enginemen, it appears, waited on Mr. Kirtley to tell him that they would rather brave the brickbats.

These handsome engines, which were used on the London expresses to and from Kings Cross, up to the opening of St. Pancras in 1868, had 6ft. 8in. driving wheels, 16½in. by 22in. cylinders, 1,136 sq. ft. total heating surface, 16 sq. ft. grate area, and carried a working pressure of 140 lb. per sq. in.

Two of them, Nos. 29 and 30, lasted until the beginning of 1905, and were the last 2–2–2 locomotives to run on the Midland Railway. No. 29 was renumbered 4 in 1889 and ended her days, as No. 4A, on the old Midland Counties line between Nottingham and Rugby. No. 30 was considerably rebuilt by S. W. Johnson in 1889 with 18in. by 24in. cylinders, steam sanding gear, and one of his standard tenders with a wide tank and the springs below the platforms. This was the only engine of the class to receive larger cylinders. She was put on to the West of England main line and for some years worked express trains between Derby and Bristol. It is interesting to recall that this line saw some of the last express passenger work by Johnson's own bogie singles, which we shall later re-encounter, and which were to be seen piloting fast trains on it right into the nineteen-twenties.

No. 33, mentioned previously, was one of the last Midland locomotives to be painted green (Johnson used a brighter shade than Kirtley's before he decided finally on crimson engines). She was equipped with steam heating for her work with the Directors' saloon, which provided such comforts while the ordinary carriages continued, for some years, to rely on the ancient foot-warmer. The big Kirtley singles were fast runners; Ahrons once timed No. 99 on an express from Birmingham to Burton, in her old age, when

she covered the 31¼ miles from Whiteacre Junction in just over 33 minutes.

There were five other Kirtley singles, which, however, had begun their careers as coupled engines. In 1857, as previously remarked, the Midland had opened its branch to Hitchin, giving it access to Kings Cross via the Great Northern Railway. The line was somewhat heavily graded between Wigston and Bedford, and consequently Kirtley built for the new service five 2–4–0 express locomotives, Nos. 311 and 313 in 1857, and 312, 314 and 327 in the following year. They had 16in. by 22in. cylinders and 6ft. 6in. coupled wheels, except for 327 which, probably from the first, had 6ft. In 1859 they were renumbered 90, 92, 91, 93 and 95 respectively. During 1860-62, Kirtley converted them to singles, as their performance had been far from satisfactory, and in their new form they resembled the No. 1 series of singles previously described. They were withdrawn during 1871 (No. 93) and 1872 (Nos. 90, 92 and 95), while No. 91 lingered on until 1874.

Six more 2–4–0 passenger engines, numbered 150-155, were built at Derby in 1859, yet these also lasted but a short time, being withdrawn and replaced during 1873-4. Their short history is the more remarkable, considering the extremely long careers of some of Kirtley's 2–4–0 passenger locomotives which, with his standard six-coupled goods, must have been the best investments in the locomotive line, on the scores of usefulness and durability, that a railway company ever made. The explanation was to be found in the frames.

Ten 5ft. 8in. 2–4–0 passenger engines with 15in. by 22in. cylinders, Nos. 50-59, were built at Derby in 1863, and of these eight were rebuilt, with second-hand boilers, by Mr. Johnson, but the really famous Kirtley 2–4–0s for general passenger service were those with 6ft. 2½in. coupled wheels, the last of which was only recently withdrawn. The earlier series had the old type of sandwich frames with tiebars. Nos. 70-79 and 86-89 were built at Derby during 1862-3. Nos. 80-85 were larger engines, with 16½in. by 22in cylinders and flush-top boilers; they were built for the excursion traffic to Kings Cross in connection with the 1862 exhibition in London. Of the 70 and 80 classes, Nos. 76, 87 and 88 were rebuilt with newer Kirtley boilers, and Nos. 80-84 were also rebuilt. They lasted into the 'nineties. Four more 6ft. 2½in. 2–4–0s, with 16½in. by 22in. cylinders, and still retaining the old type of frame, appeared in 1866. They were numbered 101, 118, 119, and 162.

In that year, however, appeared the final and very successful version with deep slotted frames. Cylinders were 16½in. by 22in., and the working pressure in the original boilers, which were still

of the raised-casing type, was 140lb. Total heating surface was 1,071½ sq. ft. and grate area 14·8 sq. ft. Weight of engine in working order was rather more than 30 tons without tender. Nos. 156-159 and 115 and 117 were built in 1866. In 1867 there followed Nos. 102-113, and Nos. 114, 116, 160, 161, 163 and 164 in 1868. The frames of five more were made in Kirtley's time, and after his death, during 1873-4, Mr. Johnson completed these and numbered them 75, 150, and 153-5, finishing the class of 29 engines.

In their early days they were used both on the London (St. Pancras) line, and on the Peak Forest line between Derby and Manchester. In Johnson's time they were rebuilt with 18in. by 24in. cylinders and new boilers, having 1,079½ sq. ft. of heating surface. When, in 1907, Mr. Deeley renumbered the Midland locomotives, there were still 22 out of the 29 in existence, with "A" numbers. They were numbered 1 to 22, and such a good job had been made of them, in the beginning and in rebuilding, that in 1923 the London Midland and Scottish Railway inherited all of them, in good condition. They retained their 1907 Midland numbers, and, with certain brief exceptions, stuck to their own country. In August or September, 1928, the author was somewhat astonished to find No. 4 acting as station pilot at Inverness on the Highland line, shoving out her strong elbows at Straths, Lochs, Barneys, Bens and Castles. It was only then, when one saw her surrounded by completely different locomotives, that one fully realised the venerable eld of a Kirtley engine. In the eastern Midlands or in East Anglia (the author, southern-born, first saw one of these engines at Cambridge in 1915) she would have been part of the landscape, but on the shores of the Moray Firth she looked like Old Siward after the fall of Dunsinane.

The L.M.S., when it withdrew No. 1, stored her with apparently loving care at Derby, and even went to the length of painting her in the Midland style and restoring her duplicate number, 156A. With her were a Kirtley goods (No. 421), a Johnson 0–4–4 tank, and a North London 4–4–0 tank. What followed will be told shortly.

War came in 1939. Millions of men died, and cities were destroyed. Machines were worked to destruction, or blown to fragments. Then, when it was all over, someone in office realised that among the survivors was old No. 2, which in the latter days of the L.M.S. had contrived to get twenty thousand added to her modest 1907 number. She went through the shops at Derby in 1948, was cleaned up and given back her Johnson duplicate number of 158A. So she was retired, after an active career of eighty-two years, which was remarkable even for a Midland locomotive, and at Derby she still is.

So, back to the 'sixties. Constructional demands were very heavy at Derby in preparation for the opening of the London line from Bedford to St. Pancras, and consequently Kirtley ordered a further thirty engines of the 6ft. 2½in. 2–4–0 type from Beyer, Peacock and Company, Nos. 170-199. In these there were marked divergences from Kirtley's design in several respects, as was not infrequently the case when a Victorian locomotive superintendent ordered engines from Gorton. The valve spindles were attached to brackets on the motion-plate by swing links, and the frames were of oak sandwich type, shallower than Kirtley's plate frames, unslotted and without tiebars. The chimneys were of the unmistakable Beyer copper-capped variety, in the author's opinion by far the most beautiful of Victorian copper-capped chimney designs. The dome casings, however, were of the Kitson-Kirtley plain variety, with spring-balance safety-valves, and not of the Gorton brass bell-mouth type. Like the 156 class, these engines had 16½in. by 22in. cylinders, but they were not so adaptable to the 18in. by 24in. cylinders which Johnson later put on the old Kirtley engines, and consequently did not last so long. No. 179 was in a bad accident at Esholt Junction, June 9, 1892, being overturned in collision. The last to remain in service was No. 198A, which was scrapped in 1904 and spent some of her last days working to Bourne in Lincolnshire, on the Midland and Great Northern Joint Railway. Those flat, level lines in the east were ever a place to find ancient engines, and as Bourne station had been improvised from the old Red House, an Elizabethan manor house which had once belonged to Sir Everard Digby, the Gunpowder Plotter, a visit to the place gave one plenty of history, whether in brick or in steam.

For working the underground extension to the Metropolitan Railway at St. Pancras, Beyer, Peacock and Company also built ten engines, similar to the 170 class, but with tanks and condensing apparatus, and numbered 230-235. They were not entirely suitable for this, and Mr. Kirtley shortly rebuilt them as tender engines. They were replaced on the Moorgate line by six Beyer Peacock 4–4–0 condensing tank engines of the standard Metropolitan type, numbered 204-209, which had indeed been built for the Metropolitan Railway, and had had allotted to them names which they never carried. These were augmented by an unassuming but, if only for their longevity, very famous series, Kirtley's own double plate-framed 0–4–4 bunker tank locomotives. The first six of these, Nos. 690-695, were built by Beyer, Peacock and Company in 1868 (one of them appears in a fine woodcut of St. Pancras Station published by the old *Illustrated Times* at the time of its opening) and twenty more, Nos. 780-799, by Dübs and Company in 1870. They had 5ft. 2½in. coupled wheels and 17in. by 24in. cylinders, and were the only bogie engines designed by Kirtley. They, and the Metropolitans, worked the underground trains and also an

of the raised-casing type, was 140lb. Total heating surface was 1,071½ sq. ft. and grate area 14·8 sq. ft. Weight of engine in working order was rather more than 30 tons without tender. Nos. 156-159 and 115 and 117 were built in 1866. In 1867 there followed Nos. 102-113, and Nos. 114, 116, 160, 161, 163 and 164 in 1868. The frames of five more were made in Kirtley's time, and after his death, during 1873-4, Mr. Johnson completed these and numbered them 75, 150, and 153-5, finishing the class of 29 engines.

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extraordinary service between St. Pancras and Earls Court via Kentish Town, the North and South Western Junction Railway, and Turnham Green. All twenty-six of the 0–4–4 tanks, rebuilt by Johnson with new boilers and 18in. by 24in. cylinders, survived to be taken into L.M.S. stock in 1923 as Nos. 1200-1225. A Beyer Peacock feature (repeated on the Dübs engines) which survived to the last was the saddle-shaped sandbox on top of the boiler barrel. It was present in the classic Metropolitan 4–4–0 tank and in some Beyer Peacock engines for railways abroad.

In their latter years, the 0–4–4 tanks were used chiefly for pilot duties from Kentish Town shed, to which they had always belonged, and right into the nineteen-thirties they were to be seen working horse-boxes and vans round to Clapham Junction. About 1920 the present author was quite familiar with them at Victoria, where their florid lines, Johnson brass safety-valve casings, and unsullied crimson made a luscious contrast with the Quakerish umber of the London, Brighton and South Coast and the horrible, dirty-dark-slate of the South Eastern and Chatham engines.

Before turning to the last two classes of express engine built in Kirtley's time, some notes must be given to his goods engines, of which an immense number was built, and the last survivors of which outlasted not only the Midland Railway but the London Midland and Scottish company also. The earliest main-line goods, apart from the archæan, had inside frames, and, as we have seen, appeared to be a joint design of Kirtley and Messrs. Kitson's drawing office. The classic Kirtley goods were very strongly-built engines, with massive outside frames, which accounted for their long-continued existence, comparable with that of the 6ft. 2½in. 2–4–0s.

Twenty goods engines with 5ft. 2in. coupled wheels and 16in. by 24in. cylinders were built by Sharp, Stewart and Company, the first two, Nos. 360 and 361, in 1854, and Nos. 362-379 in the following year. Most of them lasted until about the turn of the century, but two hardy specimens were Nos. 363, which ran until 1912, and 373 which battled on until 1918. Both had been rebuilt by Johnson with 16½in. cylinders, and 373 had worn out an uncommon number of boilers, variously dating from 1870, 1889 and 1900, though they were put on at later dates. All had plate frames, no more sandwich-framed goods engines being built after 1852, and the frame tops and platforms were curved over the axleboxes, a practice initiated by Sharp's and continued in many later Midland double-framed goods engines built during the 'sixties. The frames were, however, relatively shallow, with tiebars between the horns. Twenty more were ordered from Robert Stephenson and four from Kitson's, and were delivered during 1856 and 1857. The Stephen-

sons were Nos. 380-399 and the Kitsons 400-403. As, however, a further lot of 20 came from Stephenson's in the years 1857-59, and were numbered in sequence with the others, 400-419, the four Kitsons were renumbered 420-423 very soon after being placed in service. With two exceptions they all lasted into the present century, some of them coming into the L.M.S. stock. One of the Kitson engines, No. 401/421, was renumbered 2320 in 1907 and 2385 by the L.M.S. She was withdrawn in 1925 and restored for permanent preservation, being given her second Midland number, 421. In 1932, Mr.—afterwards Sir—William Stanier, arrived at Derby from Swindon on the Great Western, the place where certain foul play had led to the disappearance of *Lord of the Isles* and *North Star* in 1906. It was not to be expected that any ex-Swindon man worth his salt would tolerate the cluttering of his paint-shop with old Midland junk. He did not. He broke up the old treasures.

Fourteen more standard goods engines were built at Derby, contemporaneously with the second lot of Stephensons: one, No. 187, in 1857, and the others, originally numbered in this order, 180, 182, 185, 200, 220, 294, 338, 211, 424-427 and 189. They went through the usual wild orgy of renumbering and rebuilding; some acquired 16½in. and some 17in. cylinders, and they finally disappeared with the scrapping of No. 425 (L.M.S. No. 2390) in 1924. Some smaller goods engines of older design were turned out at Derby, also in 1857, one of which was converted to a well-tank and lasted until 1906 (No. 175, finally No. 2038A).

Apart from standard goods engines built during these years, there were two very noteworthy locomotives received from Beyer, Peacock and Company late in 1858. They were double-framed, 0–6–0, closely anticipating a series built for the London and South Western Railway in 1866. The boilers were of Joseph Beattie's patent coal-burning type with double firebox divided front and back by a water-filled midfeather, and leading into a combustion chamber in the boiler barrel, and were so far exactly like standard London and South Western boilers of the period, save that on the Midland they were flush-topped, with the dome, in a bright brass bell-mouthed casing, on the middle ring. (The South Western engines had the dome at the back, on a raised casing.) There was a feed-water heater of concentric water and exhaust steam pipes, and a donkey pump on the right-hand platform.

The object of the Beattie firebox was to burn its smoke. Firing was heaviest in the compartment nearest the footplate, the fire in the farther one being kept incandescent. What with this and the combustion chamber beyond, a Beattie boiler was reckoned to get every atom of combustibility out of the coal. It should be remarked that at this time coke was still the usual fuel on ordinary loco-

motives. There was no denying the fuel-dodging qualities of a Beattie boiler; nothing could touch the South Western engines in that respect during mid-Victorian years, though the heated feed-water helped. The two Beattie-boilered engines on the Midland became Nos. 428 and 429. They had the usual dimensions of 5ft. 2in. wheels and 16in. by 24in. cylinders. Total heating surface was 910 sq. ft. and grate area 17 sq. ft. Pressure was probably 130 lb., which was common on both the Midland and the London and South Western. Unlike those of Kirtley engines at the time, both sets of frames were carried past the firebox, instead of the inside frames stopping at the front tube plate.

The Beattie boilers did not last long, for the engines were equipped with the ordinary type in 1860. They then went through the usual metamorphoses. No. 429 was rebuilt with 16½in. cylinders and ran until 1905. No. 428 acquired 17in. cylinders and was withdrawn in 1911 as No. 2341. Neither engine went on the duplicate list.

It might be thought that Kirtley found maintenance of the patent boilers altogether too fidgety and expensive a business, but there was more to it than that. As well as Beattie, McConnell on the London and North Western and Cudworth on the South Eastern had produced fine, complicated boilers in the cause of burning coal instead of coke. But in 1859 Kirtley showed that an ordinary locomotive firebox would burn coal very well with the simple addition of a brick arch and deflector plate over the inside of the fire-door. While this was done under Kirtley's direction, the actual experiments in coal-burning and firebox design were carried out by Charles Markham, using standard goods engines with relatively large fireboxes. They extended over four years from 1856, and the purchase of the two engines with Beattie fireboxes was doubtless in the interest of fair trial. The fire-doors were given a horizontal oval shape, with double sliding doors worked by a treadle, an excellent form.

From 1858, the goods engines had the hornplates solid with the frames, and in 1863 Kirtley adopted for his goods engines the deep slotted frame, which had been previously exemplified in a locomotive shown by Sharp, Stewart and Company at the London exhibition of 1862, and subsequently bought by the Egyptian Government. Beginning with the 480 class of 232 engines, all the later Kirtley goods engines, of which a very great number was built up to 1873, had this form of frame. In forty built by Neilson and Company, the slots between the horns were divided by vertical intermediate members, giving the engines an even more massive appearance than usual. They had 5ft. 2½in. wheels, 17in. by 24in. cylinders; wheelbase 8ft. leading to driving, 8ft. 6in. driving to

trailing; grate area 16·84 sq. ft.; pressure, 140lb. The heating surface varied, according to the number and diameter of tubes in two varieties of boiler. One had 1,093 sq. ft. and the other 1,128 sq. ft., the fireboxes providing 106·7 sq. ft. in both cases. Most of the later Kirtley goods engines with heavy frames survived, in rebuilt form, to be taken over by the London Midland and Scottish Railway, and the class was not extinct when British Railways came to be formed at the beginning of 1948.

Three hundred and fifteen of these most admirable locomotives were built up to 1874, and with Johnson's later engines they bore the burden of London coal traffic, as well as much else, for many years. As rebuilt by Johnson they had 18in. by 24in. cylinders, and the later boilers had a total heating surface of 1,113 sq. ft., a grate area of 17·5 sq. ft., and a working pressure of 140lb. per sq. in. Weight in working order was then 39 tons 6 cwt. The last of the class to remain in service was No. 778, built in 1869. Later she became M.R. and L.M.S. No. 2630. Towards the end, the L.M.S. renumbered her 22630, and in 1948 British Railways renumbered her again as 58110. She was withdrawn for scrapping after 82 years in service, in 1951, well over a century after the formation of the Midland Railway and Matthew Kirtley's appointment as its locomotive superintendent.

So useful and so numerous a class of locomotives was bound to encounter adventures of one kind and another. Sometimes these were tragi-comic, as when No. 920 blew the bellmouth top off her chimney while working hard through Dove Holes Tunnel. So far, however, the Midland Railway had been fairly free from the more serious kinds of accident, the worst thing having been near Trent on October 9, 1869, in darkness and thick fog. A Nottingham-Derby return Goose Fair excursion came up behind a "luggage" at the Long Eaton junction, and some couplings were broken. Detonators stopped the following 11.40 return excursion to Leicester, but this was struck in the rear by the down night mail, and nine lives were lost. It was a disgraceful accident, directly caused by "time interval" signalling.

Reluctantly passing over some odd engines, a note must be given to those which worked through to the Docks in London via the Tottenham and Hampstead Junction Railway (opened July 21, 1868). Clearances were restricted, and at first some of the Sharp goods of the 360 series were employed, with special short chimneys. They were succeeded by ten 0–6–0 side-tank engines built by Beyer, Peacock and Company in 1874, which properly belong to a subsequent chapter, but which can be conveniently mentioned now. These, Nos. 880-889, had inside frames, 4ft. 2in. wheels and 17in.

by 24in. cylinders. The chimneys were short and the domes had a rather rudimentary aspect. To allow sufficient depth for the spring balances, the levers on the dome were arranged at an obtuse angle forward. When the writer knew these odd-looking engines many years later, still knocking about the Hampstead neighbourhood, the safety-valve levers were at right-angles to the boiler centre line.

The last and finest of Matthew Kirtley's express locomotives for the Midland Railway were two classes of 2–4–0, the 800 class with double plate frames and outside cranks, and the 890 class with mixed frames and outside bearings to the leading axles only. The 800 class were favourites of the distinguished Mr. Ahrons and of many people besides, with good reason. Perhaps they were the cream of Midland locomotives, at least of their time. A driver once told Ahrons that No. 815 could "do anything but talk." They were supposed to have been designed after the liberal Kirtley had received a deputation of enginemen imploring him to take the old single-drivers off the fast expresses. Sanding, at that time, was still by gravity.

The first thirty of the 800 class were built by Neilson and Company of Glasgow, in 1870, and were numbered 800-829. In the same year, Derby Works built Nos. 165-169 and 60-66. There followed in 1871 Nos. 3, 22, 23, 93, 138 and 139, making 48 engines in all. The "home" and "away" engines differed slightly in that those built at Derby had the usual lever and quadrant reverse, while the Neilsons had a screw wheel, vertical in the case of Nos. 800 and 809, and horizontal in the others. The vertical screw wheel led to trouble on October 9, 1880, when a driver, working the night Scotch Pullman, stopped No. 809 in reverse in tunnel, and on restarting backed his train for a considerable distance until, near Kibworth, it hit a following mineral train in the densely foggy darkness. This piece of mechanical clowning unfortunately cost two lives.

The 800 class, as originally built, had the following leading dimensions: 6ft. 8in. coupled wheels; cylinders, 17in. by 24in.; total heating surface, 1,088 sq. ft., of which the firebox provided 99 sq. ft. (in some, the tube heating surface was 1,031 sq. ft., and the firebox 104 sq. ft., giving a total of 1,135 sq. ft.); working pressure, 140lb.; weight in working order, 36 tons 3 cwt. All the springs were above the platforms, as in other double-framed Kirtley engines, and the trailing springs were outside the panel plates, giving a narrow footplate, though this was common enough at the time. The cylinders were set at 2ft. 6in. centres with the valves between, allowing for a more liberal steam-chest than usual. The boiler was flush-topped, with manhole cover over the firebox and safety-valves on the dome. When new, the 800 class was spread all

over the system. The first twelve Neilson engines were at Kentish Town, the next eight at Leeds, and the remainder at Bristol for the West of England expresses. Of the Derby engines, those built in 1870 were sent to Leicester. Of the 1871 lot, the first four were sent to Skipton for working the "Little" North Western, and the last two of the class went to Carnforth, whence, however, they were later transferred to Derby.

In 1876, as will be described in the next chapter, the Midland Railway opened its extension to Carlisle, and S. W. Johnson, then in command, rebuilt the 800 class for dealing with the new Scotch expresses, which were relatively heavy trains with Pullman cars. As altered, Nos. 169, 800, 804 and 805 had 18in. by 26in. cylinders, and the others 18in. by 24in. The Johnson boilers had 1,225 sq. ft. of heating surface, and weight of engine in working order was increased to about 40 tons 10 cwt. The original frames, 1⅛in. thick (outside) and ⅞in. (inside), were fully strong enough and were retained. New wide tenders were provided. The rebuilding gave the engines a much more modern appearance. There was a real cab, by the English standards of the time, instead of the Kirtley bent-over sheet, and the antique wooden-headed buffers, which Kirtley used to the last, were replaced by the ordinary type.

Thus, the 800 class had their rebuilt form for most of their long existence. The Midland did not overwork its engines like the London and North Western, but the 800 class responded to walloping on heavy grades with a good load. Ahrons recorded No. 815 taking 130 tons up the big hill from Carlisle to Aisgill summit, 48¼ miles, in 59 minutes. This, the "intelligent" engine mentioned previously, renumbered 48, had a sad end; she was broken up after severe damage in the collision at Hawes Junction (now Garsdale) on Christmas Eve, 1910. The accident is later described. Thirty-six of the class survived at the 1907 renumbering, having previously been duplicated with "A" numbers. Thus, Nos. 165A-169A, 60A-66A, 800A, 802A-806A, 808A-829A, 138A, 139A, 93A, 22A and 23A, in that order, were renumbered 23-67. The survivors continued to be numbered in this series by the London Midland and Scottish Railway in 1924. The last to run was No. 60 (old No. 827), which was withdrawn in July, 1936.

Matthew Kirtley's last express engines, the 890 class, with inside bearings to the coupled wheels, first came out in 1871. They, and some of the goods, were the first Midland locomotives to have cabs, and in appearance, apart from the "skyline," they strangely resembled Edward Fletcher's 901 class on the North Eastern Railway, which appeared in the following year, even in the pear-shaped slots to the driving splashers, though Fletcher's square bins bore no likeness to the neat Midland sandboxes on the front curves of

the splashers. In the 890 class the coupled wheel springs were at first compensated, and underslung below the inside axleboxes, although, of course, the leading axle outside springs above the platforms were similar to those of the 800 class.

Leading dimensions of the 890 class, as built, included 17in. by 24in. cylinders and 6ft. 8½in. coupled wheels; 1,122 sq. ft. of heating surface (firebox, 94 sq. ft.); grate area, 16 sq. ft.; working pressure, 140lb.; weight in working order, without tender, 36 tons 12½ cwt. Neilson's built Nos. 890-909 in 1871, and Nos. 2, 90, 92, 95, 125 and 148 in 1872. They were the last Midland engines to have the old-fashioned flat double doors to the smokebox. During 1873-74, Derby Works built Nos. 5, 7, 12, 19, 21, 40-49, 67-69, 72, 78, 91, 120, 121, 123, 124, 127, 131, 132, 151 and 152. Johnson rebuilt the 890 class with 18in. by 24in. cylinders, 1,225 sq. ft. of heating surface, and detail differences. The compensating beams between the coupled axle springs were removed during 1875-6. The main frames being inside, the cylinders were at 2ft. 4in. centres, leaving less generous space for the valve chests, and the engines, as rebuilt, were not quite such happy steamers as the 800 class. Nevertheless, they lasted for a long time, and Johnson built Nos. 126, 128, 130, 134-136 during 1874-5, with his standard boiler having 1,225 sq. ft. of heating surface. They were partly duplicated, then renumbered 68-126 in 1907. During 1885-95 they were rebuilt with 18in. by 24in. cylinders. The last in service, No. 92, ran until December, 1938. By a freak this engine, like No. 90, received her old number in the 1907 renumbering.

There remained ten more passenger engines designed during Kirtley's time. They were Nos. 1070-1089, and were built by Sharp, Stewart and Company, appearing after their designer's death, in 1874. They had 6ft. 2½in. coupled wheels and 17in. by 24in. cylinders. The main frames were inside, as with the 890 class, but like other Sharp engines on the Midland, they had the valve spindles suspended by swing links from brackets on the motion-plates. Kirtley's own arrangement had gunmetal guides for the valve rods, bolted on top of the slide bars. They came out with Johnson chimneys.

The death of Matthew Kirtley in 1873 severed a link with the very early days of railways. As we have seen, he had been with the Midland company ever since its formation, as well as serving the Birmingham and Derby Junction Railway before that. He can be quoted as one of the very few locomotive engineers, certain or other of whose engines were to be seen at work over a stretch of a century. A parallel might be given in Joseph Beattie, of the South Western, who built his first engines in 1850, but the Beattie tank engines which have survived in Cornwall were actually built

after his death. The longevity of the Kirtley locomotives on the Midland Railway must be ascribed to their excellent workmanship, the strength of the frames, their adaptability to rebuilding when that became desirable, and their good steaming qualities.

At the close of Kirtley's life, great changes were impending, both in Midland Railway extent and traffic, and in the nature of the loads. As yet, most if not all the passenger carriages were small four-wheelers, with luggage rails on the roofs and other archaisms. A first- and second-class four-compartment four-wheel composite of 1861 measured 23ft. long over headstocks, on a wheelbase of 15ft., and was not more than 6ft. 9in. high inside. This was a "big" carriage. A three-compartment first-class of 1867 was 20ft. long, and a corresponding second-class, with four compartments, about a foot longer. They had rectangular body mouldings, and the first-class had rounded top corners to the quarterlights, a common form at the time. Nobody could have guessed, from looking at these indifferent specimens, what changes the next few years would bring. For on the Midland in the 'seventies, coaching underwent a revolution that had repercussions all over the country.

Chapter Five

RENAISSANCE

"WHAT dreary country!" said the stout lady in the unbecoming striped costume.

The scene was a dining carriage of the Midland Railway, the place was near Blea Moor. Your author, then a small boy, had never in his life before travelled in so superb a train; he had only once before been on the Pennines, and he thought those vast, bare tops of England very grand indeed. But that was the first time the Striped Lady had made any comment on the scenery since leaving St. Pancras, or had even looked out of the window. Neither the green shires nor the fiery stacks of Sheffield had stirred her. The same went for her idiotic children, who had only left off playing snap in order to fight, eat, or to be led out feeling sick. Filled with a colossal sense of intellectual superiority, for I always despised people who were oppressed by solitude or made sick by trains, I reflected that the Stout Lady in Stripes would, without doubt, be everlastingly damned, and gave my attention back to the scenery and to the fleeting glimpses of our red engines pounding round the curves ahead. A horrid little boy I was, surely, but it was a most memorable journey.

It seems a very long time ago now, though of course it is not so in relation to Midland Railway history. The building of the Settle and Carlisle line, with its new route to Scotland, belongs to that great Midland Renaissance period, when Edward Shipley Ellis became chairman of the company and James Allport was general manager.

In the 'sixties, the Midland Railway could count some Anglo-Scottish traffic, but could hardly boast about it. At Ingleton this had to be handed over to the London and North Western, and though the North Western, under such formidable worthies as Richard Moon and William Cawkwell, was now a very respectable railway, with its robbery-with-violence past decently unmentionable, it was still determined that companies like the Midland should know their place. Midland traffic sometimes took an incredible time to get from Ingleton to Carlisle. Midland passengers were attached to goods trains and dumped out on the bleak platforms at Tebay at ghastly hours. The Midland thought longingly of an independent route to the Border, and was backed up by the North British. An Act for the building of the Settle and Carlisle line was passed in 1865, giving the Midland user of Carlisle Citadel station. Then the Caledonian and the Glasgow and South Western companies

showed signs of wishing to amalgamate. As the Caledonian was an inseparable North Western ally, and as the Midland had been looking to the Sou-West for access to Glasgow, this was serious. The G. and S.W.R. had to be detached from its scandalous infatuation. By the time the necessary diplomatics had been achieved, the Midland was a little out-at-elbows. A great deal of money had been spent on the London extension, and the Scotch jackpot seemed more difficult to attain than ever. Now the North Western company craftily offered to talk turkey in regard to reviewing conditions of transfer traffic between Ingleton and Carlisle, on condition that the Midland abandoned its mad enterprise among the high fells. W. P. Price, then chairman of the Midland, faltered, and began to climb down. But he had reckoned without his allies, the North British, which looked forward to taking over remunerative traffic at Carlisle, and the Lancashire and Yorkshire, which would have a tap on the line in South Yorkshire, and be able to send its traffic straight to Scotland without dictation from the North Western. When the Midland sought to abandon its Settle and Carlisle project, it was firmly opposed by its friends, and the abandonment Bill was thrown out. The Midland company seems to have pulled itself together with a sort of "Heh-heh! Bless my buttons, what was I about? Even Jove nods, don't-you-know!" and, under the stern eyes of North British and L. & Y. proceeded to carry out its duty.

Out of Tasmania, that remote island a little like an Antipodean Scotland, where there were marsupial wolves and other improbable creatures, but no railways before 1871, came a huge pioneer named Sharland. He it was who surveyed the Settle and Carlisle line, and planned it with a ruling gradient of 1 in 100. The Midland Railway got that ruling gradient, but they got over twenty miles of it. Over the fells he went, this gaunt young engineer from the South of the World. One of his bases was the Gearstones Inn, eleven miles up from Settle and many more from anywhere else, and there, in the course of his survey, he was snowbound for three weeks.

So he plotted his line, and so it was built, through the carboniferous limestone of the North West Riding, by Pen-y-Ghent, and the table-mountains of Ingleborough and Wild Boar Fell, through the boulder clay, which slides about when wet and forms a concrete when dry, by tunnel and great viaduct, and across the great Pennine Fault into the Permian beds and the more luscious Vale of Eden. The big man conquered the fells, and in conquering he died.

In the path which he had blazed there sprang up the navvy towns. Where Ribble gushes from the limestone (we call it Ribblehead today, and for many years since), there was Batty Green, taking its name from a pothole with the engaging name of Batty Wife's Hole. It should be added that the name had a frightful

origin, connected with the end of the late Mrs. Batty. It had a population of over two thousand, a schoolmaster to teach the wild children of wilder men and women, a parson who waded through the mire, gaitered like a bishop. It had Sunday fights galore. Its beef arrived on the hoof. Its architecture consisted of appalling hovels. There were other, lesser places (though two supported schoolmistresses, and one wonders what manner of tough Victorian girls they were!), and where they were is now nothing but huge, bare hills, rock outcrops, short sere grass and a most noble railway. The work was carried out under five contracts, including one for the six-mile branch from Hawes Junction to Hawes. Resident engineers and navvies worked in isolation, building towards each other. There was Blea Moor Tunnel (1 mile, 629 yds. long), through millstone grit, limestone and shale, its summit 1,151ft. above ordnance datum and the crown of its arch 500ft. below the moor, at the end of a twelve-mile climb and a rise of 700ft. from Settle. Headings were driven from seven shafts, so that there were sixteen working faces at once. Rock drilling was not very advanced in the early 'seventies. Lighting was by candles which, like old-time miners, the men carried on their caps.

The building of Blea Moor Tunnel took over four years. It proved a damp, terrible tunnel. It drove men mad, so that they could go underground no more. To this day, though much shorter than many English tunnels, it is a horrible place. Freaks of temperature prevent the smoke from escaping up the shafts in certain weather. The rain trickles down the shafts; in winter it freezes on its way down; the austerely pure icicle becomes an obscene black *bougie* depending with hundreds of others in each monstrous vent.

But what is a mile and a half of Styx in seventy miles of the Delectable Mountains? The experience of travel, in fair or foul times, from Hellifield by Settle to Carlisle, on plush or on footplate, would be the poorer without Blea Moor Tunnel, though none but a blockhead would walk through it for fun. Nor are those Delectable Mountains any place for elegant promenading. They are no more for the sissy-æsthete than they were for the Stout Lady in Stripes. They are the Backbone of England.

Construction began in November, 1869, and the first sod was cut near Settle, in the policies of Anley House. Estimated cost of the line was £2,200,000. In fact, it came to three and a half million. J. S. Crossley was resident engineer during building. Winter and summer the navvies toiled, under that heat that can come where huge hills close in, lashed by those winter winds that only the Pennines know. English, Irish and Scots were there, and when they were not working they bashed each other with the bare fist. In each community there was a Cock o' t' Camp; he owed his title to his

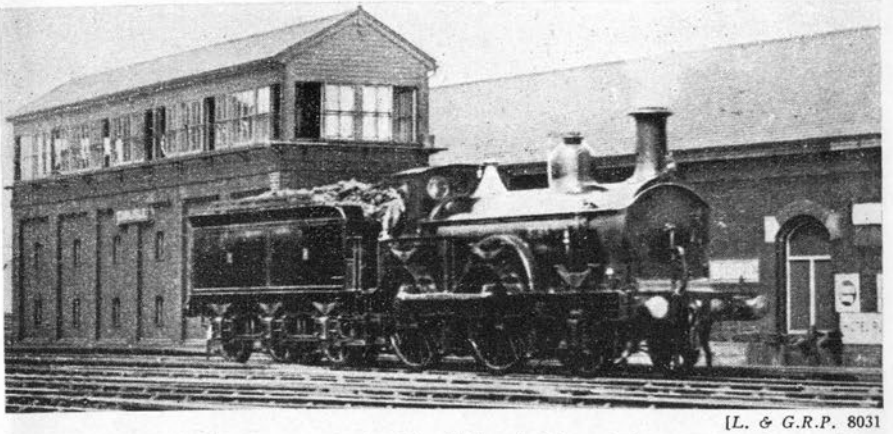
knuckles, and kept it until one of his numerous challengers defeated him. In the early summer of May, 1871, smallpox broke out, and did far more terrible damage than any Sunday morning blood-bath. At and around Batty Green, during the years 1869-1876, nearly a hundred died through accident, sickness and exposure to the weather.

It is tempting to go on writing of the Settle and Carlisle line through many pages, but fortunately there is already an excellent history of it already written,* plagiarism of which would be difficult to avoid. In 1873, coal traffic was being handled as far as Dent Head. On August 2, 1875, goods trains began running between Settle and Carlisle. During the autumn and winter, special rolling stock for the new Scotch expresses was being built, and passenger trains began running from St. Pancras to Glasgow St. Enoch, and Edinburgh Waverley, via Settle and Carlisle, on May 1, 1876. The new line began at Settle Junction, on the "Little" North Western line, and ended at Petteril Bridge Junction on the Newcastle and Carlisle line of the North Eastern Railway. Thus, the newest main line in the North of England was linked to the oldest, the Newcastle and Carlisle Railway having been completed in 1839. Many years after, this resulted in L.M.S. expresses from the South entering Carlisle over the London and North Eastern Railway.

Today the line stands as it did; it has grown into the country, and into the lives of the people. In these days, these high days of the motor, the Midland main line remains a life-giving artery for communities in remote places. From Settle Junction to Petteril Bridge is rather more than 72 miles. The climb begins in the first mile; between Settle Junction and Blea Moor Tunnel it rises at 1 in 100 for nearly 10½ out of 15 miles, ending in the tunnel itself. Beyond Blea Moor, the line is easier, but still rising, with a short stretch at 1 in 120, to the summit level of 1,169ft. at Ais Gill signal-box. In Blea Moor Tunnel itself, as already remarked, is a summit of 1,151ft. Dent, at 1,145ft., is the highest railway station on an English main line. From Ais Gill the descent to near sea-level at Carlisle is longer than the ascent from Settle, but in its 47 miles it includes nearly 12 miles on 1 in 100, accounted for by most of the stretch from the summit to Ormside Viaduct.

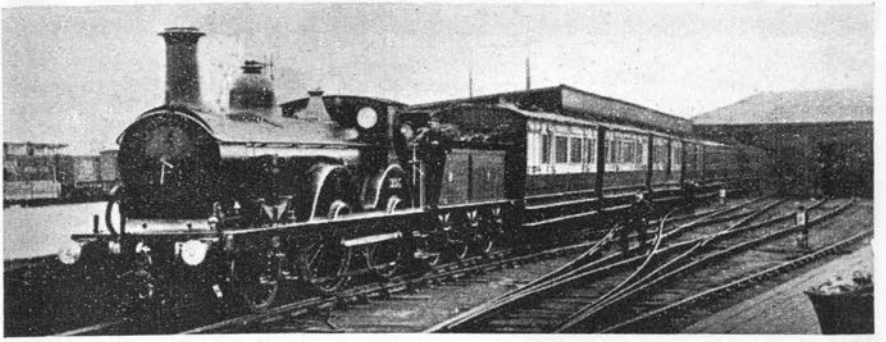
Heavy engineering works abound. Ribblehead Viaduct, built of the surrounding limestone, has 24 spans, a length of 440yds., and a maximum height of 165ft. above valley bottom. Every sixth pier is 18ft. thick at the spring of the arch, and the others are 6ft. thick. It took five years to build. Smardale Viaduct is 237yds. long

* *The Story of the Settle-Carlisle Line*, by Frederick W. Houghton and W. Hubert Foster. Bradford, 1948: Norman Arch Publications.



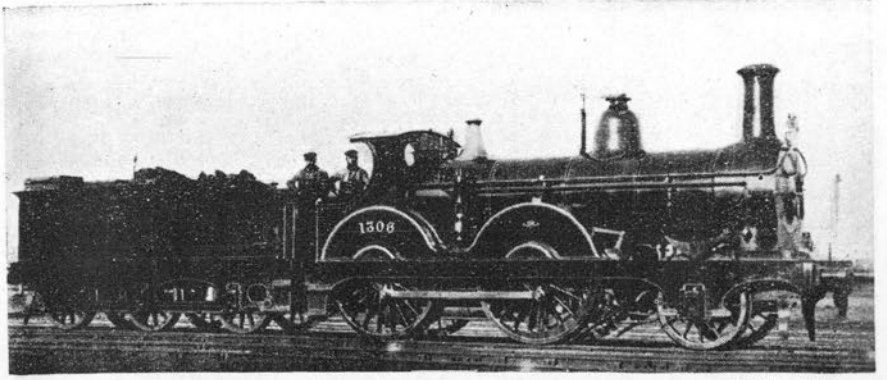
[*L. & G.R.P.* 8031

Rebuilt Kirtley 800 class express engine No. 813A, with large Johnson tender for working on the Settle and Carlisle line, backing into Carlisle past the L.N.W.R. signalbox.



[*L. & G.R.P.* 5423

Johnson 2-4-0 engine No. 1305 at Gloucester old station; the first three carriages of the train are London & North Western—two saloons and a brake-composite.



[*British Railways*

S. W. Johnsons 6ft. 6in. 2-4-0 express engine No. 1306, built by Dübs & Company in 1876, with Westinghouse brake

Above: Attenboro' in 1920; the station house and office separated from the platforms by the crossing. The train approaching from Trent is headed by 0-4-4 tank engine No. 1419, uniquely equipped with a capuchon.

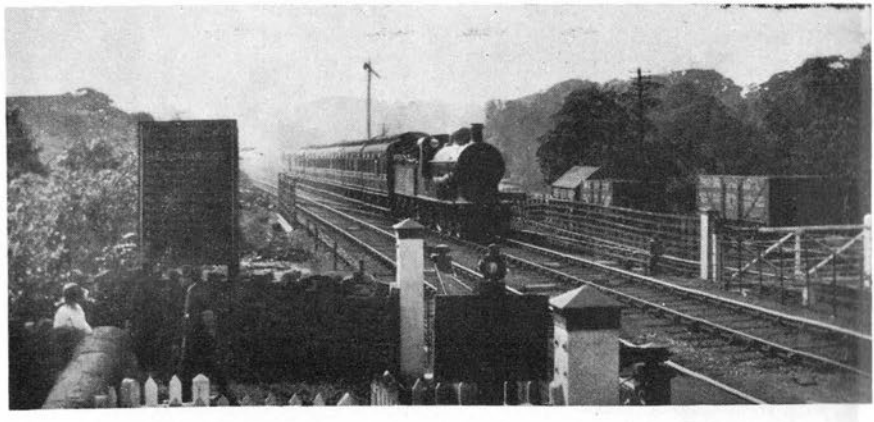
[*W. H. Whitworth*

Left: Attenboro' signalbox, exemplifying all the Midland conventions in windows and timbering.

[*W. H. Whitworth*

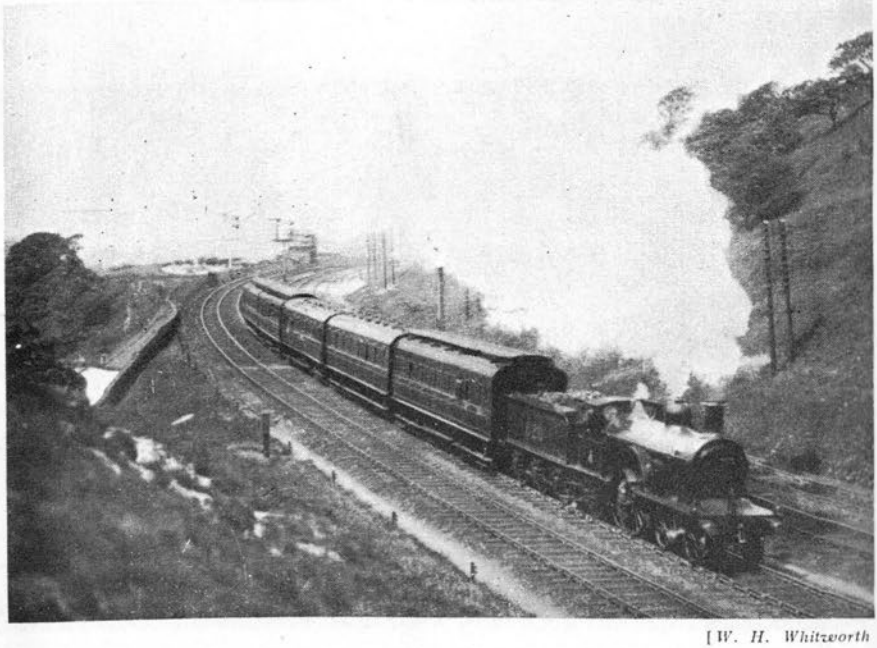
Below: Halton crossing, with a Morecambe-Leeds train approaching. The large board gives a list of Halton Bridge tolls, from foot passengers (one penny each) to motor car or horse drawing carriage (three shillings).

[*J. E. Kite*



[*W. H. Whitworth*

Topping the Lickey: Bristol-Birmingham train entering Blackwell, hauled by 2-4-0 engine No. 177 and banked in rear by two 0-6-0 tanks: Clayton carriages

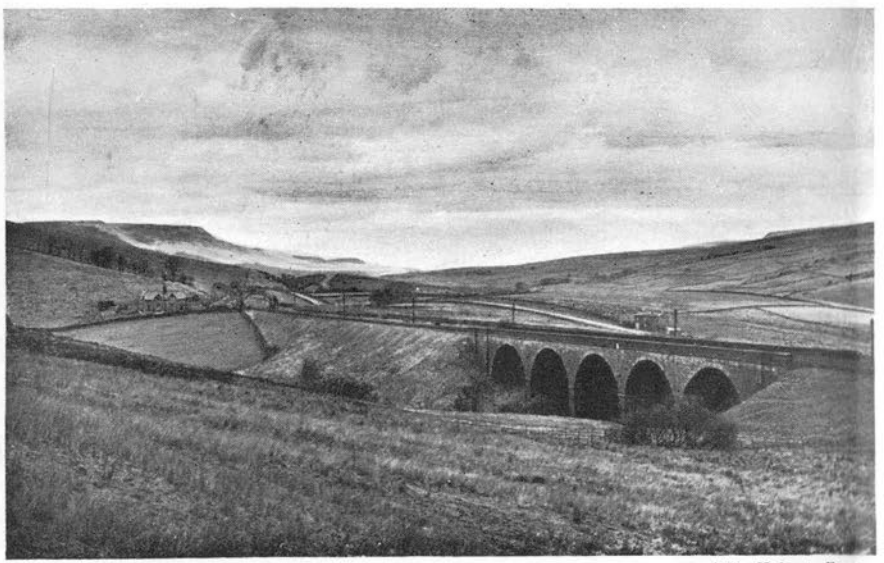


[*W. H. Whitworth*

Climbing into the Peak: up Manchester train, with Johnson bogie single No. 620 heading a mixed rake of Clayton and Reid carriages.

[W. Hubert Foster

The highest water troughs in the world, near Hawes Junction (now Garsdale). Pack-ice has sometimes formed on the troughs during very hard winters.



[W. Hubert Foster

Along the Backbone of England: View of Lunds viaduct, looking towards Ais Gill The distant table-mountain is Wild Boar Fell.

and 130ft. high, with twelve spans. This also occupied five years in building. The last stone was laid in 1875 by Mrs. Crossley, wife of the resident engineer. The foundations go down to 45ft. below the riverbed of Scandal Beck. Moorcock Viaduct stands across the bog called Dandry Mire, where a high embankment was originally intended but proved impossible. It is 227yds. long and 50ft. high, with twelve spans. Ormside Viaduct provides the first crossing of the River Eden, and gives the traveller a view of great loveliness after the savage country through which he has passed from the South. It is 200yds. long and 90ft. high, with ten spans. The second crossing of the Eden is on Long Meg Viaduct, a beautiful thing of the local red sandstone.

Other viaducts, many of them over 100yds. long, are the two Ribble Viaducts south of Ribblehead, Dent Head, Arten Gill, Lunds, Ais Gill (just over the watershed, 1,167ft. above sea-level), Crosby Garrett, Griseburn, Long Marton, Crowdundle (on the Westmorland-Cumberland County March), Dodd's Mill (Little Salkeld), Armathwaite, Dry Beck and High Stand Gill. Griseburn Viaduct marks the halfway stage between Settle and Carlisle.

There are over 3¼ miles of tunnel, though only Blea Moor exceeds a mile between portals, with its 2,629yds. The next longest is Rise Hill (1,213yds.). Other tunnels are, in order going north, Moorcock, Shotlock Hill, Birkett, Crosby Garrett, Helm, Culgaith, Waste Bank, Lazonby, Baron Wood Nos. 1 and 2, and Armathwaite. Of these, Birkett Tunnel (424yds. long) is interesting in that it occurs on the great geological fault of the Pennine Chain, and was bored through a remarkable succession of shale, magnesium and mountain limestone, millstone grit, slate, iron-ore, coal and lead.

While the Settle-Carlisle line was building, times were indeed anxious for the Midland Railway, and shareholders were more than inclined to be voiceful at the annual general meetings. W. P. Price resigned the chairmanship, and was succeeded by Edward Shipley Ellis, son of the old pioneer, John Ellis. James Allport was general manager, holding office from 1853 to 1880, after which he joined the Board. Of this great and good man you shall read more shortly in another connection. When his portrait was painted, on his retirement from office, he had the painter give him Blea Moor for background.

Later events in the history of the Carlisle road will be dealt with in their turn. It may be mentioned now that in 1907, when Richard Deeley introduced water-troughs on the Midland Railway, they were put in at a level stretch just south of Hawes Junction (now Garsdale). They are the highest troughs in the world. Water-

troughs, it should be added, occur abroad only in the Western Region of French National Railways, and on certain lines in the Eastern United States.

Almost coincident with the opening of the Settle and Carlisle line was the great coaching reform carried out on the Midland Railway by Thomas G. Clayton, appointed carriage and wagon superintendent in the early 'seventies, at the instance of Allport. This most worthy general manager had for long been distressed at the poor facilities and wretched accommodation which all railways, in those days, allowed to third-class passengers. He aimed at reforming both, on a grand and generous scale, and at the same time greatly improving the standard of all passenger carriages. As we have seen, to the end of the 'sixties the ordinary Midland coach was a box-like four-wheeler with a nearly flat roof on to which the luggage was piled. First-class had three compartments, second-class four, and third-class five miserable coops, the last-mentioned having only semi-partitions.

There were a few odd experimental carriages, of which the most memorable was a German-built first-class four-wheeler with a chariot or coupé at each end. It had all the appearance of a genuine expatriate, and was painted in the dark green favoured by Central European railways. On this, the Midland Arms looked like the escutcheon of an archduke. Continental Europe, then and for long thereafter, could show extremes of both quality and iniquity in railway carriages. Some of the best German and Austrian vehicles in 1871 were distinctly good of their period.

In 1872, however, Allport undertook a very extensive tour of North America, travelling about 6,000 miles in the parlour and sleeping cars which George M. Pullman had first begun to build in large numbers during the boom of recovery following the Civil War. They impressed Allport more than anything in Continental Europe, where the best things so far were some sleeping cars built by Georges Nagelmackers of Liége, under the sponsorship of a somewhat spivvish character, Colonel William D'Alton Mann. Mann's undertaking was reconstituted in 1876 as the International Sleeping Car Company, but Allport would have none of him. In 1873, a year after Mann's venture in Belgium and Germany, and following Allport's detailed report on American travel to Price, George M. Pullman was presented to the Midland shareholders at a half-yearly meeting, and his patent cars described and illustrated, with models. The proprietors of the Midland may have been a little cagey, but Pullman, the astute cabinet-maker turned coachbuilder turned big-businessman, undertook to have designed and built to suit the British loading gauge a number of sleeping cars, parlour cars and day-coaches, the last-mentioned to be equivalent to British

second-class and third-class, and to operate them at his own risk on the Midland Railway. So it was agreed. On January 25, 1874, the Pullman sleeping-car *Midland*, having been shipped over in parts and assembled at Derby, made its appearance on British rails. It was 58ft. 5in. long over platforms, 9ft. wide and 12ft. 2in. high. It was built entirely of oak and mahogany, even the bogies, which were of the equalised type with spiral outside springs and compensating beams between the axleboxes, and double cantilever bolster springs. It contained 24 sleeping berths, upper and lower, on the American plan. Apart from reduced dimensions, and 3ft. 6in. Mansell wooden-centre wheels (larger than American car wheels), it was entirely Yankee in design, even to the central couplers. Body and frame were in one piece, forming a strong oblong box, with access by open platforms and wrought iron gates. The roof was clerestoried with domed ends, the upper story having great bronze Argand lamps, a wondrous improvement on the smoky stink-pots which passed for lamps on nearly all British trains in those days. (The Midland had some gas-lit carriages for working underground to Moorgate, but so far only the Lancashire and Yorkshire had put them into main-line service.) Further, the Pullman car was well warmed by an oil-fired hot-water heater. It was most richly furnished in crimson plush, figured oilcloth and gilding and highly decorated outside as well. The old Pullman colour style was a very dark, almost greenish brown, decorated with arabesques in gold-leaf, with the same on the sides of the clerestory, the roof coverings being oxide red.

No such magnificent passenger vehicle had been seen in England before. Another Pullman sleeper, *Excelsior*, issued from Derby in the middle of February, and thereafter sleeping and parlour cars came out in quick succession, in readiness for regular service on the Midland Railway. The Midland later called the " parlours " *drawing-room** cars, which had a different meaning from the American term. In the States, a " drawing-room " was a generous two-berth sleeping *compartment*. *Excelsior* had eight convertible sleeping sections with central gangway and two compartments, a common arrangement for Pullman sleepers. All the American cars had water-closets and lavatories, served by force-pumps from low-level tanks. Hitherto, on British trains, lavatory arrangements had been present only in family and invalid saloons, and in early British sleepers put on by the North British, Great Northern, and London and North Western companies in and after 1873. The Pullman parlour (or drawing-room) cars had plush armchairs mounted on fixed pivots. None of the cars had kitchens; such a thing did not

* From *withdrawing room*, whither the ladies of the party *withdrew* while the gentlemen took port (eighteenth century and probably before).

appear until 1879, on the Great Northern Railway Pullman car *Prince of Wales*.

But on St. Patrick's Day, March 17, 1874, the Midland Railway ran a Pullman special from its headquarters at Derby to St. Pancras, carrying the directors and principal officers. The catering firm of Spiers and Pond, which was later to serve several major British railways, but was then an obscure undertaking with origins in colonial Melbourne, provided luncheon on the way, having prepared the viands beforehand. This was the first slap-up, formally-served meal to be eaten on a train in Great Britain. Then an exhibition run was made with the same cars from St. Pancras to Bedford and back. The jolly boys of the Press, primed with old sherry, stuffed with poultry and game, floated in champagne and well oiled with liqueur brandy at Mr. Pullman's expense, at length staggered back to The Street to write eulogies and panegyrics. Words possibly failed some of them, but one recorded with apparently deep feeling that there was *nothing left to de re*.

On June 1, the Midland Railway put on a special express between St. Pancras and Bradford, composed of five vehicles, two genuine Pullmans and three ordinary American day-coaches for second- and third-class. It was the first train in this country through which one could pass from end to end, though apparently passengers were not encouraged to go from car to car, and indeed there was no need for them to do so. It was also the first in which everybody, third-class passengers included, had access to lavatories. It was the first to be properly warmed throughout (by closed-circuit hot-water heaters), though in June these were not necessary. To us it is surprising that it did not get the public support which its sponsors expected. But so it was. The day-coaches, at any rate, soon disappeared because people would not ride in them. One can only suppose that the change from riding in an oblong box, probably facing five complete strangers, to travelling in a sort of chapel, possibly regarding the backs of some dozens of necks, was too drastic. The ordinary American day-coach seat of that time was not luxurious. It was quite short, with a small, reversible back, and its red plush belied its hardness. But one cannot think that the shiny yellow boards of the contemporary English third-class were really found preferable. And the good lighting, the Baker heaters, and sanitary blessedness? We would have none of them!

But the drawing-room and sleeping cars, made available to first-class passengers for a surcharge, were another matter. Businessmen found the midnight sleeper between London and the West Riding comfortable and convenient. In the spring of 1875, Marple curve was put in from the Midland to the Cheshire Lines, to give

direct running to Liverpool, and on April 1, night Pullman sleeper services began between St. Pancras and the Merseyside.

The Pullman sleeping and parlour cars lasted on the Midland for many years, and the company bought them into its own stock in 1888. It continued to run them on their old services; indeed, so well built were they, and so comfortable, that the company had no more real sleeping cars built until the end of the century, and even then ordered them from the Pullman works in America. The old cars ended their active days as saloons for excursion parties and other odd jobs. At least one became a push-and-pull set, and was to be seen, early in the present century, and for a while on the Harpenden and Hemel Hempstead branch. The remote control equipment comprised a wondrous rattle of cables and wires, which were conducted through the clerestory roof over the passengers' heads. But in their day there were no more gorgeous railway vehicles in England than these in their pride of plush and grandeur of gilding. Even at the last, when the bogies were done and could run no more, the bodies were so sound that they were turned over to use as sheds and messrooms all over the Midland Railway, and as such, several survived into our present time.

But the Midland company did not merely sprinkle Pullmans about its passenger services and sit back with a Jack Horner remark. Allport meant to give good service, which meant much better service than anybody else provided, for all his passengers. In 1872 he had caused all passenger trains to convey third-class passengers. This was thought very shocking by some other companies, who considered that an express train was something for which travellers should be made to pay handsomely. This concession was not at first peculiar to the Midland. The Great Eastern made it at the same time, and some lines, notably the Great North of Scotland, never had second-class. But Allport's action on the Midland considerably agitated his neighbours, especially the London and North Western Railway. Feeling between these two companies had long been high, ever since the Midland had forsaken the North Western for the Great Northern in running its traffic to London. The extension to St. Pancras, and then the building of the Settle-Carlisle line, had perpetuated the irritation of Euston. New Street Station, Birmingham, which had a Midland side and a North Western side, had, in miniature, the touchy atmosphere of cities like Jerusalem and Trieste in modern history.

On January 1, 1875, the Midland company abolished second-class bookings throughout its system. All second-class carriages were immediately made third-class, and the old wooden thirds were broken up as fast as they could be replaced. Then it was announced that in future all third-class carriages would have upholstered seats

and that in all new ones there would be a minimum distance of 6ft. between partitions. (It worked out at 5ft. $11\frac{3}{16}$in. in practice.) The travelling public was delighted, but the innovation was greeted by other companies with squeals of dismay and disapproval. It was "pampering the working classes," it was this, that and the other. But from the Midland action, which was really entirely Allport's work, sprang the eventually universal practice in Great Britain of having cushions on the seats of all passenger vehicles save those of paddy trains, used by miners and labourers who travelled with the grime of their toil upon them.

After 1874 no more four-wheel carriages were built by or for the Midland Railway, except horseboxes and vans. The standard coach became a six-wheeler, sometimes with four first-class compartments, sometimes with five thirds, or composite with four compartments and a luggage compartment in the middle. All partitions were taken right up to the roof, instead of stopping short at shoulder-height or lower, as in the old English third-class. Further, during 1874-5, thirty-two coaches on four-wheel bogies were built for the expresses between London and the North. They were small, weighing only $18\frac{1}{2}$ tons, but they showed the shape of future construction.

For the new Scotch traffic, forty-four bogie twelve-wheel composite carriages were built to the designs of T. G. Clayton during the winter of 1875-6. They were incomparably the best ordinary coaches to be seen on any British railway, then or for some years after. Each contained four third-class compartments, three first-class, and a luggage compartment, the last-mentioned similar in size to a first but equipped with double doors. As these were the forerunners of the thousands of bogie compartment-type coaches built since then, they deserve some detailed description. The bodies were 54ft. long, 8ft. wide, and 8ft. $4\frac{1}{2}$in. high inside. At that time, headroom of 7ft. was described as "lofty" and there were hundreds of carriages still running with 6ft. or even less. The bogies were of the American equalised type, of oak with iron flitches, and Mansell wood-centre wheels on a base of 10ft. 6in. The pivots were at 36ft. centres.

Thirty-two of these very handsome twelve-wheel carriages were built by the Metropolitan Carriage and Wagon Company, and twelve by the Ashbury Carriage and Iron Company. They had their limitations—lighting was still by oil pots, heating by foot-warmers, and sanitation was outside, but the travelling public liked them well, and they gave good service on the Midland, latterly with steam heating and oil-gas lighting, for some thirty years and more. They have been described as having had clerestory roofs "in imitation of the Pullman cars." This is not strictly correct.

The clerestory was there, but it was almost an exact copy of a design introduced on the Great Western in 1874, with fixed decklights and bonneted hit-and-miss sliding ventilators arranged symmetrically with the windows and ventilators in the sides of the bodies. In every respect, therefore, the coaches were according to British conventions, just as the Pullmans were pure American. Their only point of resemblance was in general contour when marshalled together in one train, as they were on the Scotch expresses.

In the third-class the seats and backs were stuffed with horsehair and trimmed with buttoned-in woolly repp, while the first-class were of the classic British type with deep winged and elbowed seats, sprung and overstuffed in blue broadcloth, three to each side. The bottoms of the doors had draught-excluders, a detail for which one hankers on some other carriages even to this day. A series of eight-wheel third-class carriages was built with the same type of body, having five compartments and a rather large luggage space, giving them the appearance of brake-thirds. The door-handles had hinged grips, after old road carriage practice, and the commode handles were of the "S" shape which survived, in modified form, on the latest Midland coaches.

Such were the vehicles employed on the first Midland Scotch expresses. They were at the time far superior to anything either the West Coast or East Coast companies had to show. The late T. R. Perkins described the twelve-wheelers as "running like a dream," even in old age, which is more than one could say for Webb's radials on the London and North Western, or Howlden's rough six-wheelers on the Great Northern—unless it were a bad dream.

After 1877, Mr. Clayton discarded the clerestory from new construction, and did not restore it until 1892, when it appeared on some dining carriages. Midland coaching phraseology needs explanation. To the Midland carriage and wagon department, a "car" was something built in America—i.e. a Pullman—*and nothing else*. The diners were, therefore, dining carriages, and when, at last, sleepers of entirely British type appeared, they were sleeping carriages. There was something like this on the Great Northern also; there one had sleeping carriages and dining saloons. One may speculate on reasons why Clayton suppressed the clerestory for so many years, before finally making it a standard feature of all Midland main-line coaching stock. His original design, like that of the Great Western, had only a single thickness of glass in the decklights. This resulted in excessive condensation, so that the moisture dripped on indignant bald heads and other vulnerable targets below. The passengers then complained that the roofs were

leaking, which was bad for Midland prestige. Further, the clerestories "skied" the lamps, so that their feeble glimmer became worse than ever. The Great Western Railway, retaining the clerestory, overcame lighting trouble by placing the oil lamps in the lower decks, two to a compartment. Mr. Clayton did this also with gas lamps when he revived the clerestory in the 'nineties, with improvements to overcome the condensation troubles also.

For working passenger and goods trains over the Pennines, S. W. Johnson built a large number of new engines—building against new opening had been a periodic task of the Midland locomotive department—and these will be described in a succeeding chapter. But eleven of Kirtley's 800 class were sent as well, eight of them being stationed at Leeds (Holbeck) and the other three at Skipton. Houghton and Foster, in their book on the line, mention the Leeds engines as having been Nos. 812-819, and, of these, No. 815, as we have seen, did some of her finest work, and completed her existence, between Settle and Carlisle. Ahrons mentioned Nos. 902 and 903 of the 890 class as working the Scotch Pullmans farther south, at the end of the 'seventies, and gives the following specimen load: two eight-wheel Pullman cars, three twelve-wheel coaches, three eight-wheel coaches, three six-wheel coaches, and two vans. The last-mentioned may have been six- or four-wheeled, but it was a massive train for an engine of the dimensions of the 890 class. All these vehicles were built entirely of wood, apart from the axles, tyres, axleboxes, springs, buffing and brake gear, and were not so heavy as they looked. The big twelve-wheelers were only 22½ tons each, and the Pullmans were supposed to be about 21½ tons, though I am inclined to think that the old Pullman stock books contained more than a little fiction. In one I have seen, a weight of "21 tons 9 cwt." recurred with a suspicious constancy not agreeing with structural differences between certain cars. Supposing the six-wheelers to weigh at most ten tons each, and the vans seven, with the eight-wheelers at 18½ tons the "Scotchman" would tare 231 tons behind the tender, not a featherweight for a mid-Victorian express engine. It should be added that a train like this would be divided at Skipton, whence one part would follow the other to Carlisle before they went their separate ways to Edinburgh and Glasgow, a Pullman to each.

The Scotch expresses at this time were equipped with Westinghouse air brakes, which the Midland had first essayed as far back as 1873. The Midland was a distinguished pioneer of continuous brakes in Great Britain, and conducted the celebrated trials, to which five other companies sent trains, on the Nottingham and Newark line during June 9-16, 1875. Three Midland trains took part, one fitted with the Westinghouse automatic air brake, and

the other two with hydraulic brakes, Clark's and Barker's respectively. Hydraulic brakes were used for some time on the London suburban trains which ran down to the Metropolitan lines, and had to be equipped both for this steep gradient and for rapid stopping. At the Newark trials, the best results came from the Midland Westinghouse train, which was stopped in 19 seconds and 913ft. on a dry rail, from a speed, on application, of 52 m.p.h. The train weighed 203 tons, 4 cwt.

The brake question was still very much open. In 1878 the London to Leeds and Bradford expresses were fitted with Sanders and Bolitho automatic vacuum brakes, forerunners of the present arrangement. Connections between vehicles were in pairs, the hoses having male and female ends. T. G. Clayton, the carriage superintendent, designed the universal coupling, with single hose connections, used to this day. The Midland Railway finally decided on automatic vacuum, and dropped the Westinghouse, in 1889, the year in which a terrible accident on the Great Northern Railway of Ireland resulted in compulsory adoption of automatic power brakes on British and Irish railways.

A concluding note must be given to the Midland's great general manager, James Allport, who had steered the company through the troubled seas of nineteenth-century boom and slump, and had brought it to its renaissance. He was a characteristic eminent Victorian of the best type, astute and forceful, yet genial and kind, not unaware of his merit, but regarding it with the same sort of satisfaction as he would have done in considering others.

Allport was born in Birmingham in 1811. At the age of 28 he was chief clerk to the Birmingham and Derby Junction, of which, shortly after, he became general manager. He was dismissed as redundant on formation of the Midland Railway, but George Hudson placed him in command of the Newcastle and Darlington Junction, which he saw expand under his management into the York, Newcastle and Berwick. In 1850 he went as general manager to the Manchester, Sheffield and Lincolnshire Railway, and thence, in the same office, to the Midland in October, 1853. In the spring of 1854, he joined the Midland Board, but in 1857 he returned to office as general manager. From this he retired at the beginning of 1880, returning to the Board to fill the vacancy left by Edward Shipley Ellis, who had been chairman since 1873. A diplomatic move of 1877, which did not bear fruit, was for the joint acquisition by the Midland and the Great Northern of Allport's sometime command, the Manchester, Sheffield and Lincolnshire Railway. Allport was presented, on retirement, with a cheque for £10,000, by vote of the Midland proprietors. In 1884 he was knighted for his services

to cheap travellers. He lived to see the fiftieth anniversary of the Railway Clearing House, of which he was the father, and died, full of years, within sound of the Midland engine whistles, for his end came, on April 25, 1892, in the Midland Grand Hotel at St. Pancras.

Towards the close of his long and active career, Sir James Allport said: "If there is one part of my public life on which I look back with more satisfaction than on anything else, it is with reference to the boon we conferred on third-class travellers. I have felt saddened to see third-class passengers shunted on to a siding in cold and bitter weather—a train containing amongst others many lightly-clad women and children—for the convenience of allowing the more comfortable and warmly-clad passengers to pass them. I have even known third-class trains to be shunted into a siding to allow express goods to pass. When the rich man travels, or if he lies in bed all day, his capital remains undiminished, and perhaps his income flows in all the same. But when the poor man travels, he has not only to pay his fare, but to sink his capital, for his time is his capital; and if he now consumes only five hours instead of ten in making a journey, he has saved five hours of time for useful labour—useful to himself, his family, and to society. And I think with even more pleasure of the comfort in travelling we have been able to confer on women and children. But it took twenty-five years to get it done."

Chapter Six

TOWARDS THE 'NINETIES

THERE was once an Irish railway, the Waterford and Limerick, which was noteworthy for its numerous succession of locomotive engineers, and for the infallible frequency with which they were dismissed, asked to resign, or induced to tender resignation. The Midland Railway Company lasted nearly eighty years, and in that time only four men commanded Derby Works—Matthew Kirtley, Samuel Waite Johnson, Richard M. Deeley and Henry Fowler. Moreover, as we have seen, the company inherited the first of the four from the Birmingham and Derby Junction, and at the end it bequeathed the services of the fourth to the London Midland and Scottish. Surprising again is the fact that the third man held office only for a few years, and then turned aside in anger after what seems to have been a memorable row. For the present we are to consider Derby's No. 2.

Samuel Johnson was not in the least like his literary namesake. Nor had he any resemblance to his predecessor in office. Old Matthew Kirtley had been the rough, jovial, homespun sort of engineer, the man who had once been a fireman, and whose daughter married a title. We see his likeness in a group of his staff, grinning amid all their serious faces, wearing solid-looking clothes that do not fit. His engines, as we have seen, were like him: rugged, not conspicuously elegant, tremendously substantial and lasting. Mr. Johnson was as surely Mr. Johnson as Mr. Kirtley had been Old Matt. He was a pillar of the Church, with a formal beard, neatly attired in discreet dark dittoes, a man of kindly severity and meticulous habit. His work, like himself, was meticulous. A Johnson locomotive was designed like a work of art, and made like a watch. " Mechanical judgment " was the virtue, in the words of Mr. P. C. Dewhurst, himself the meticulous historian of Midland locomotives and an eminent locomotive engineer of his own time. The Johnson engines were among the most beautiful of all the many lovely designs produced during the later Victorian years.

In finish, and in the way they were kept by the men they excelled those of any other railway in the world. Another extraordinary thing was the elegance which distinguished the old Kirtley engines after Johnson had rebuilt them, especially the 800 class expresses. As Tom Clayton was supreme of his generation among coachbuilders, it can be realised why neither of the rival lines—the North Western and the Great Northern—produced express trains to compare in stately symmetry with those of the Midland

Some details of Samuel Johnson's pre-Midland career may be allowed. He was born near Leeds in 1831, and served his time at E. B. Wilson's Railway Foundry, which was then building Jenny Linds in large numbers. Later he was on the Great Northern under Archibald Sturrock, and with Charles Sacré on the Manchester, Sheffield and Lincolnshire Railway, he was works manager for five years, before going to the Edinburgh and Glasgow Railway as locomotive superintendent in 1864. For the E. & G.R. he built some excellent 2–4–0 double-framed passenger locomotives which lasted on the North British Railway into the present century. In 1866 he succeeded Robert Sinclair as locomotive superintendent of the Great Eastern Railway. For that company he built many engines in a short time, and two designs anticipated his later Midland work. One of these was the 0–4–4 side-tank and the other was a most handsome 4–4–0 express, designed during 1872-3. The latter (of which two were built) were not completed until after Johnson's appointment, in 1873, as locomotive superintendent of the Midland. They were the first 4–4–0 bogie express engines, with inside frames, of what became for years a British national type, to run on any English railway, and to his last days their designer would claim the distinction with pride. The type had appeared previously in Scotland, with Wheatley's engines for the North British Railway, and it is *just* possible that Johnson had had something to do with the preliminary scheming of these, after the amalgamation of the Edinburgh and Glasgow with the N.B.R. and before he left Cowlairs for Stratford. That must not be taken as more than an idea of the author's, and improbable at that. Johnson left Cowlairs in 1866, the Wheatley bogies appeared in 1871, and the Johnson bogies on the Great Eastern in 1874.

The change from the Great Eastern to the Midland was a considerable one. The former was a poor railway, which had had locomotives seized by its creditors not so long before (an indignity also suffered by the London, Brighton and South Coast and the Somerset and Dorset). The Midland, although at that time having a rather anxious time over the economics of the Settle and Carlisle line, was a great and dignified undertaking, and its credit was high. Its traffic was far heavier, as well as much more widespread, than that of the Great Eastern.

While, as remarked, Johnson developed two of his Great Eastern passenger engine designs, the bogie expresses and the 0–4–4 tanks, on the Midland, a queer thing happened in respect of some of the others. On the Great Eastern he had built some very useful little 2–4–0 locomotives for the lighter country trains, and in later years, on this railway, James Holden developed this design so successfully that it came to be the last representative of

the 2–4–0 tender engine in Great Britain. But Johnson did not take his Great Eastern 2–4–0 to Derby. Instead, he developed Kirtley's existing 2–4–0 in its several large and small-wheeled varieties. In one respect, however, he deviated from Kirtley. Although he built many locomotives with double frames on the Midland, he never combined this feature with outside cranks and bearings on coupled engines. The only Johnson engines with outside driving-wheel bearings were single-drivers, as will be later described.

But marked changes were made in the appearance of the engines on the Midland. To begin with, they were painted a brighter green, retaining black and thin white lines, but the important change was in the outline. The large, plain, cylindrical dome in a round-topped cover, stemming from Kitson's in 1849, gave place to a smaller dome, still having the safety-valves on top, but with these enclosed in a very neat, small extension of the casing in the form usually, though not entirely accurately, termed "bellmouth." The curves of the dome casing were on a complex series of radii. The same applied to the bright brass casing of a supplementary direct-loaded safety-valve, mounted over the firebox, and to the superb Johnson chimney—a chimney which the author admits to having found very difficult to draw, and which is better described by illustration than in words. One of its peculiarities was the upper lip, which was slightly wider than the barrel of the chimney at its narrowest diameter. Johnson's earlier tenders on the Midland had the springs inside the frames and below the platforms, an arrangement which, while it made a neat, slick-looking tender, rendered the springs most uncomfortably inaccessible, a fault which distinguished Stroudley's inside-framed tenders on the London, Brighton and South Coast, and the Drummond bogie tenders on the London and South Western and the Highland Railways. The later Johnson six-wheel tender was a very handsome version of the standard British outside-framed type, which had been introduced almost simultaneously by McConnell on the North Western, and Joseph Beattie on the South Western, in the 'fifties. Johnson's Midland Railway cab was derived rather from that which Kirtley put on his last express engines and some of the heavy goods, and was another masterpiece of curves, although, considered as a shelter from wind and weather, it was more than somewhat austere.

For the opening of the Carlisle road in 1876, Johnson built a modified 6ft. 2½in. version of the 890 class Kirtley 2–4–0 express engines with mixed frames, using his own boiler with 1,225 sq. ft. of heating surface and 140lb. pressure. They were Nos. 1, 9, 10, 13, 70, 71, 73, 74, 96 and 146 (renumbered 147-156 in 1907). They were not entirely successful engines at first, and seemed to suffer from an inclination to break their crank axles. After a while they

were sent away from Skipton, where they were at first stationed, and replaced on the Carlisle line by other engines. They were, however, noteworthy as the first of many more 2–4–0 passenger locomotives built in Johnson's time, and also because one of them was the very last to remain in service. This was No. 96, renumbered 155 in 1907, and afterwards L.M.S. No. 20155. In 1931 the L.M.S. assigned her to departmental duties, with the old London and North Western *Engineer South Wales* iron nameplates. She was allotted British Railways No. 58020, but it was never painted on, and she was withdrawn in 1950 at the ripe age of 74.

The next series, also built in 1876, had larger coupled wheels; Nos. 50-54 had 6ft. 6in., and Nos. 55-59 6ft. 8in. In the same year, Dübs and Company built Nos. 1282-1311, with 6ft. 6in. wheels. Cylinders in all these engines were 17½in. by 26in., and they had the standard Johnson boiler for this type, with 1,225 sq. ft. of heating surface. In 1877 came ten with 7ft. coupled wheels, at first numbered 1347-1356, and renumbered 101-110 in 1879. They were used on the best main-line passenger trains, and were at various sheds from Bristol to Carlisle. The five 6ft. 8in. engines were always at York, according to Ahrons, who knew the Midland intimately through his boyhood in Leeds and Bradford. In 1879 a further series of 75 2–4–0 express engines began to appear, Nos. 1400-1409 in that year, 1472-1491 in 1880, and 1502-1531 during 1880-81, the last-mentioned from Neilson's and the others from Derby, all with 6ft. 9in. drivers. Further, there were Nos. 111-115 with 6ft. 6in., and finally (1881) ten more 7ft. engines with 18in. by 26in. cylinders (Nos. 1492-1501).

These 2–4–0 locomotives were the first to have the final design of Johnson six-wheel tender. No. 1500 is reputed the first Midland engine to be painted red, a dark shade like that of the Furness. According to Mr. W. B. Thompson, the real Derby red, the famous red, made its appearance in 1883. It was a wonderful glowing colour, for engines most unusual, and like that of no other railway. On the London and North Western, McConnell had painted his "Bloomers" and others in a brave bright vermilion; on the South Western up to 1859, Joseph Beattie used an Indian red; the Furness favoured a sort of purple brick red. But Midland red was quite different. One wonders how much of its peculiar lustre was due to ingredients, and how much to the very high standard of finish and maintenance on which Johnson always insisted, but the result was superb. An engine going through the paint-shop received two coats of lead-grey paint, all rough places being stopped with a mixture of gold size and dry white lead, rubbed smooth with water and pumice. On top of this went four coats of purple brown, then one of crimson lake with an admixture of purple brown. After lining

out, five coats of varnish were applied. All black portions were as carefully treated as the coloured, and in special cases, for exhibition, the underside of the boiler barrel was painted cream, to reflect light on the motion underneath. The inside of the cab was yellow.

Tender sides were divided into two panels by black and yellow lines, with the letters M.R. in gold-leaf, blocked black, one in each. The buffer-beam was vermilion with a very narrow black edge divided off by a thin white line, and the initials M.R. in gold, shaded blue on the left side, one letter each side of the draw-hook. The paint was made in the works at Derby. Midland carriages had been crimson for much longer than the engines, though some of the very old ones, broken up in the 'seventies, were dark green. Officially, Midland red was perpetuated by the London Midland and Scottish Railway after 1923, but it was never the same, save for a while on the Midland Division, owing to changes in the ingredients.

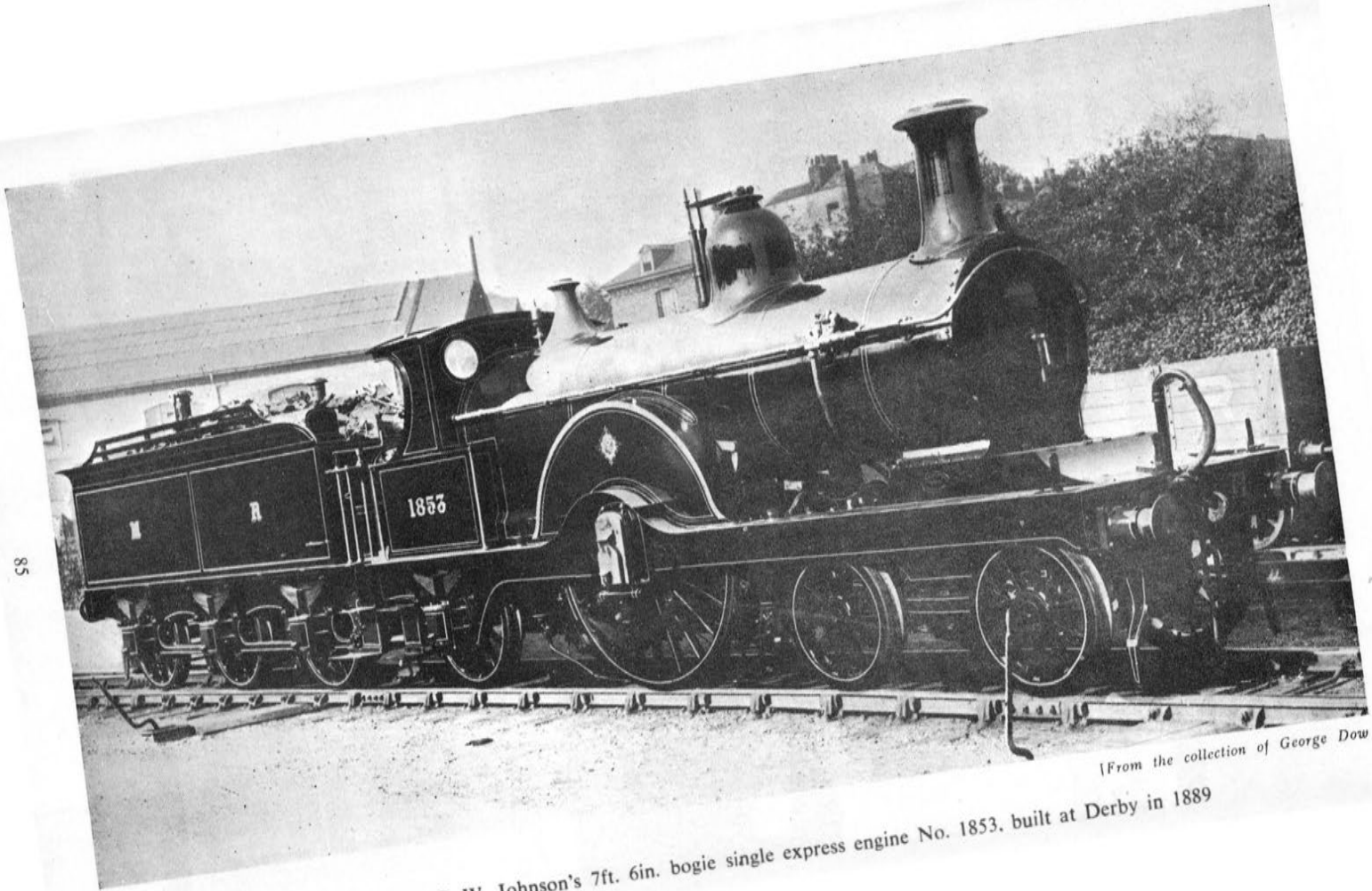
While many of the 2–4–0 locomotives were yet to come, Johnson built the first of his many bogie expresses for the Midland Railway. At least, Kitson's did the building, turning out ten 4–4–0 engines for the Midland in 1876. They were very similar to the two pioneers on the Great Eastern, but had 17½in. by 26in. cylinders (the G.E. had 17in. by 24in.). There were two conspicuous differences in outer appearance; the Midland engines had straight platforms, while the Great Easterns had them raised to clear the throw of the coupling rod cranks without use of supplementary splashers; also, the Midlands had proper Johnson tenders, while William Adams, who completed the two Great Easterns, thriftily made do with old Sinclair tenders, somewhat upsetting their otherwise harmonious appearance. Shortly after, however, he put on his own chimney and cab—and Johnson tenders.

Further to the first Midland bogie express engines, they had 1,215 sq. ft. of heating surface, rather less than that generally provided on the Johnson 2–4–0s. Grate area was 17·5 sq. ft. The bogie wheels were of 3ft. 3in. diameter at 6ft. centres, coupled wheelbase was 8ft. 6in. and total wheelbase 21ft. 6in. Weight without tender was 40 tons 7 cwt., with 26 tons 17 cwt. on the coupled wheels. These very handsome engines were numbered 1312-1321. From 1890 onwards they were equipped with 18in. cylinders, but although rebuilt then and at other times, they retained the small type of Johnson boiler throughout their long existence and underwent little modification at all. In 1907 they were renumbered 300-309 and about this time they were given Deeley's parallel chimneys. Nos. 300, 303, 304, 305, 306 and 308 were taken into L.M.S. stock in

1923, and of these No. 306 (old No. 1318) lasted until November, 1930. Writing from pleasant recollection, let me record at least one piloting the Scotchman up to Aisgill in 1926.

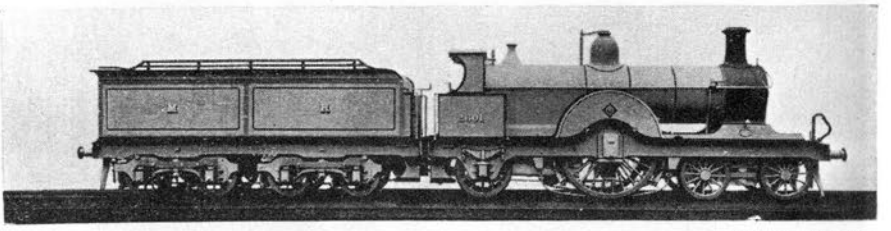
In 1877, Dübs and Company built twenty more bogie engines, similar to the 1312 class but with 7ft. coupled wheels, 3ft. 6in. bogie wheels, and 1,313 sq. ft. of heating surface. Johnson used these slightly larger bogie wheels on all his 6ft. 9in. and 7ft. passenger engines thereafter, an example of his continual attention to the importance of proportions. This second series was numbered 1327-1346. By 1907, Mr. Deeley had broken up Nos. 1332 and 1336, and the number of the latter had been taken by the original 1346. The eighteen survivors were renumbered 310-327, No. 1336 (ex-1346) becoming 318. In 1909, No. 323 was rebuilt with an extended smokebox, but this was the only major structural alteration to be carried out on any of the first thirty of Johnson's four-coupled bogie express engines. Numerous similar locomotives built afterwards were all rebuilt in the present century, so thoroughly in their later years that at last nothing of the original fabric can have been left beyond, perhaps, some wheel centres. No. 323, the extended-smokebox engine, ran until 1929, but No. 311 (originally 1328) gave useful service until 1934, working latterly from Peterborough shed, where she could be seen any day alongside the similar, but smaller-wheeled 4–4–0 passenger engines which Johnson built for the Midland and Great Northern Joint Railway. Some of these had been rebuilt with larger boilers, but many were similar to No. 323, with small boiler and extended smokebox. Up till about 1928-9, the M. & G.N. engines were painted yellow. For many years, Peterborough was a colourful place for locomotives, with Great Northern green and Great Eastern blue as well as the red and yellow, likewise the North Western's " blackberry black."

For the Great Eastern Railway, Johnson had built the first of its numerous 0–4–4 tank engines, and in 1875 he repeated the design for the Midland, which was eventually to have 205 examples of this excellent class, making, with the old Kirtley engines, 226 0–4–4 tank engines altogether, the most numerous collection in the country. (The runner-up was the London and South Western, with 215, divided into three main classes.) An interesting point is that in their time the 0–4–4 tank engines of both railways did a remarkable amount of real express work, though the best of this, in the case of the Johnson engines, was performed by an additional series built for the Somerset and Dorset Joint Railway. The earliest Johnson tank locomotives for the Midland and the Somerset and Dorset had no cabs, like the thirty on the Great Eastern, though later they all had a rather airy sort of cab with narrow side-sheets.



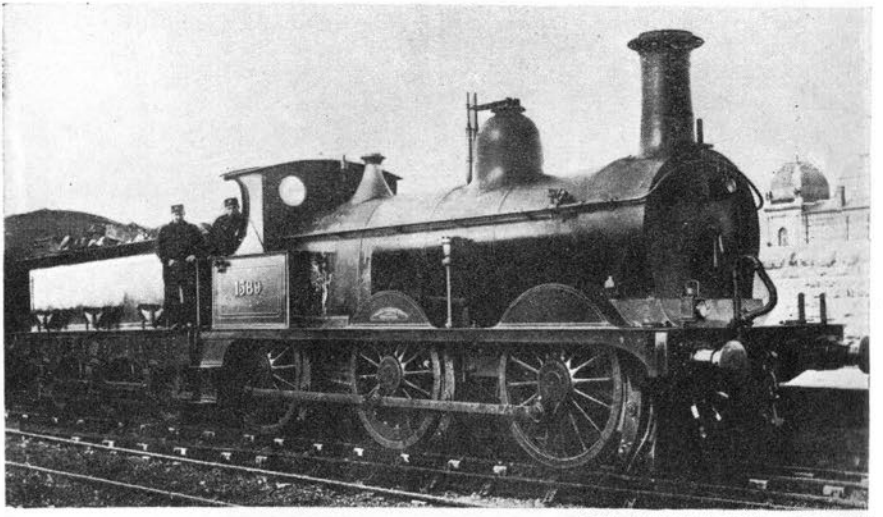
[From the collection of George Dow

Beauty in repose: S. W. Johnson's 7ft. 6in. bogie single express engine No. 1853, built at Derby in 1889



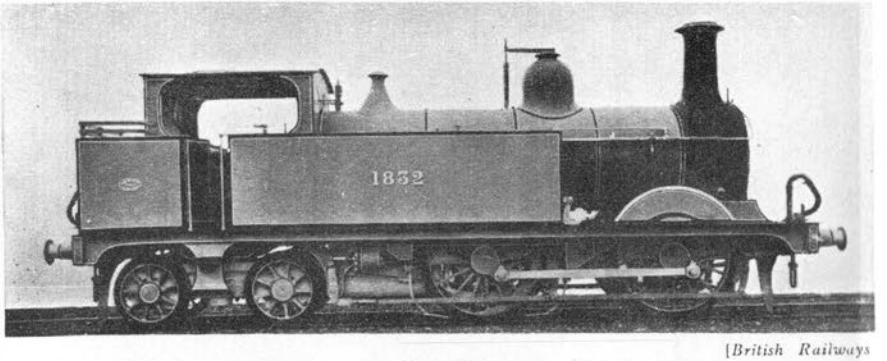
[British Railways

S. W. Johnson's large bogie single express engine No. 2601, *Princess of Wales, built* in 1900 and awarded the Grand Prix at the Paris Exhibition of that year. She is shown with the large bogie tender employed before the introduction of water troughs on the Midland Railway.



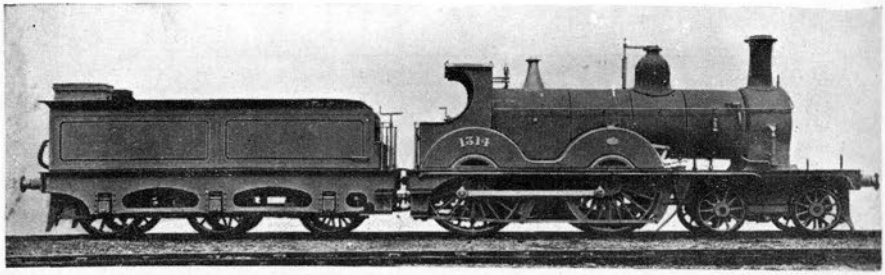
[From the collection of George Dow

Johnson standard 5ft. 2½in. main-line goods engine No. 1589, built by Beyer, Peacock & Company in 1889; became No. 1340 in 1907.



[British Railways

Johnson standard passenger tank engine No. 1832, built at Derby in 1889: renumbered 1340 in 1907; became British Railways No. 58053.



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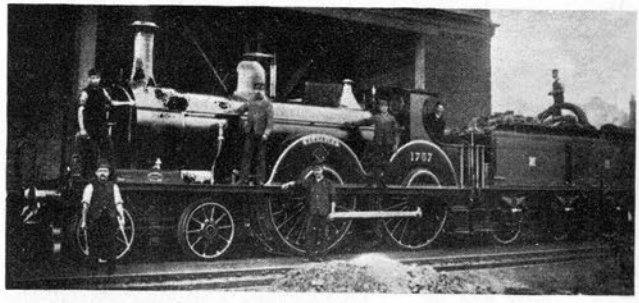
Above: S. W. Johnson's bogie express engine No. 1314, built by Kitson & Company, 1876; renumbered 302 in 1907, withdrawn in 1920.



Right: Beautiful *Beatrice*, the famous Johnson 7ft. bogie engine built in 1887.

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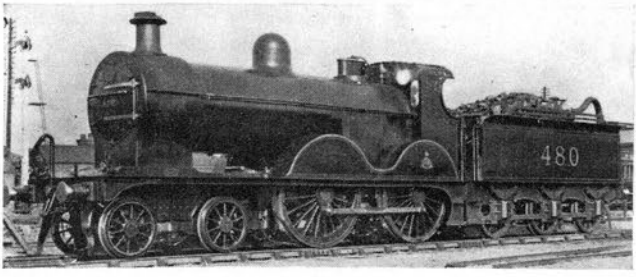
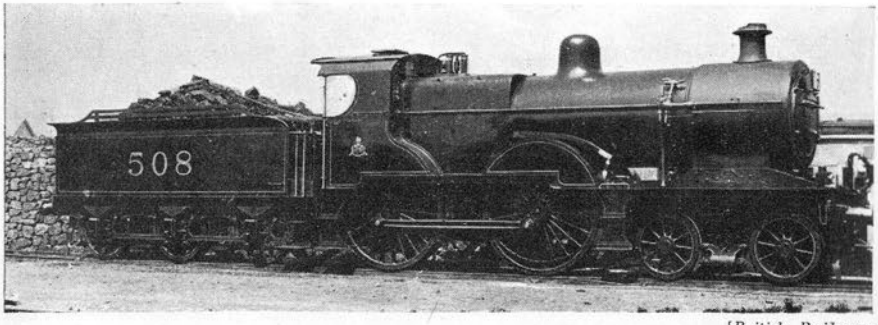


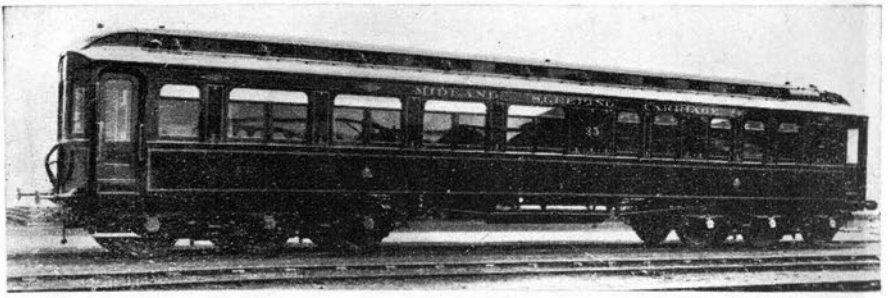
Left: Johnson 4-4-0 express engine No. 480 as rebuilt by R. M. Deeley.

From the collection of George Dow



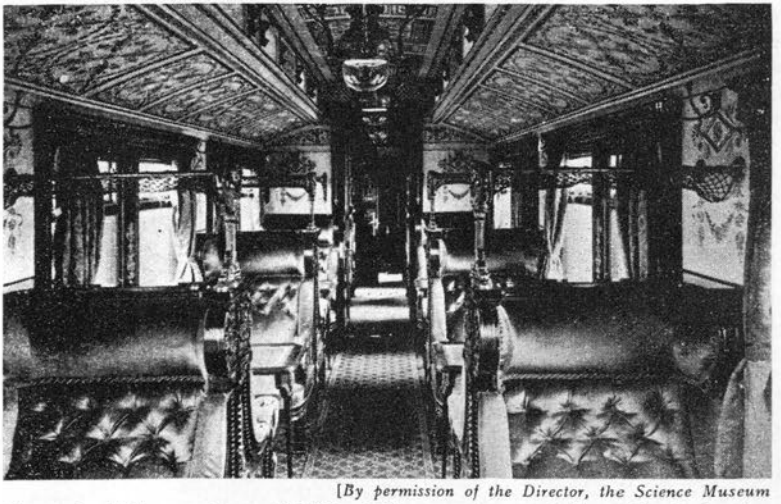
[*British Railways*

Standard class 2 express engine No. 508, built in 1912. Nominally she was a rebuild of Johnson's No. 2426, which had already been rebuilt and renumbered in 1907.



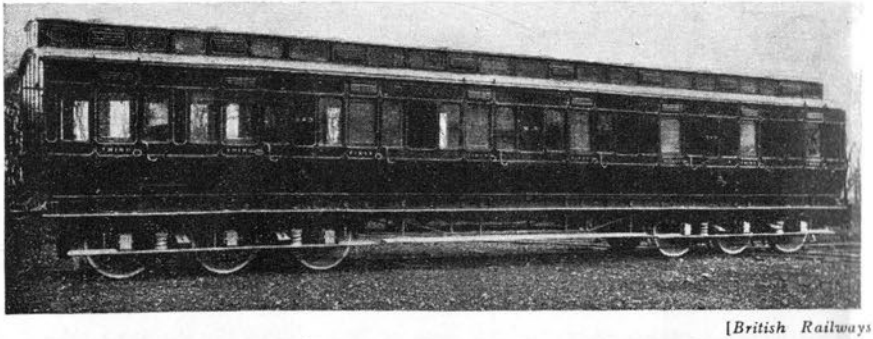
[*British Railways*

Sleeping carriage No. 35: Pullman body imported from America, with British pressed-steel bogies and Pintsch gaslight; built in 1900.



[*By permission of the Director, the Science Museum*

Clayton's dining carriage of 1896, which was decorated "regardless" by the House of Gillow, It had Pullman type Argand gas lamps, and was trimmed in green silk.



[*British Railways*

Clayton's twelve-wheel composite coach, 1875; it was all of wood, including the bogies, but was far superior to ordinary carriages of the period. Lighting was by oil pots.

The first variety were most like the Great Eastern, but with the addition of condensing equipment for working through the Metropolitan line to Moorgate. They had 5ft. 3in. coupled wheels and 17in. by 24in. cylinders. They were Nos. 6, 15, 18, 137, 140-144 and 147, renumbered in 1907 1226-1235, immediately following the Kirtley tanks. After them came thirty with 5ft. 6in. coupled wheels, numbered 1252-1281, most of which appeared in 1876. They were rather curiously renumbered in 1907; Nos. 1262-1281 became 1236-1255, and Nos. 1252-1261 became 1256-1265, one of those several examples of Midland numeration which seem to have been designed with the special object of confusing the latter-day student and causing the historian to flounder.

The 1252 class had cabs from the beginning, unlike the No. 6 class. The boilers had 1,209·4 sq. ft. of heating surface, 17·5 sq. ft. of grate area, and the then usual pressure of 140lb. per sq. in. Many more 0–4–4 tank engines were built between 1876 and 1900, the final version having 18in. cylinders and 5ft. 3in. coupled wheels. The tanks and bunkers were also enlarged, increasing the working order weight from 43½ to 52 tons. After 1907, and in the early days of the L.M.S., the complete range of Johnson 0–4–4 tank engines was numbered from 1226 (the old No. 6, as mentioned) to 1430, but it should be remarked that, under the L.M.S., the series came to include twelve Somerset and Dorset engines brought into stock and allotted Midland numbers as these fell vacant. For many years after their simultaneous introduction to the Somerset and Dorset, the Johnson 0–4–4 tanks were that railway's express engines. Before the Midland and the London South Western jointly took it over, the S. & D.R. was about as crazy an undertaking as ever conducted business, at least as a nominal main-line railway. On January 21, 1876, shortly after the joint committee was formed, there was a frightful head-on collision in the middle of the night at Radstock. It might have been the dying kick of the old régime. The M.R. and the L.S.W.R. between them made of the Somerset and Dorset a model line. In 1880 the Midland began to run through trains from Bradford to Bournemouth, and a through coach from Bradford to Plymouth (Friary) via Templecombe and the London and South Western. Break-of-gauge beyond Exeter prevented through north-to-west running on the Great Western, which was thus at its old disadvantage.

The 0–4–4 remained the standard Midland passenger tank engine for the rest of the century and after, though five 4ft. 6in. 0–6–0 passenger tanks for branch-line service, Nos. 218, 219 and 1397-1399 appeared in 1883. An interesting design which did not, however, materialise, was for a 4–4–4 express tank engine in the late 'nineties. It might have made a very useful engine within a

limited range of fast short-distance hauls in the North, or again on the Somerset and Dorset, and would have rather resembled, one imagines, the very handsome 4–4–4 express tank engines built for the Holland Railway in 1914. These, true, were much bigger engines, with superheaters, but owing to the more generous Dutch loading gauge their proportions were comparable.

It was only to be expected that S. W. Johnson would build a very large number of 0–6–0 goods engines, as Kirtley had done before him, leading off with no less than 120 in 1875, in preparation for the opening of the Settle and Carlisle line. They had 4ft. 10in. wheels and 17½in. by 26in. cylinders, and were numbered 1142-1251, 381-385, and 400-404. Thirty of them, Nos. 1222-1251, went straight to Carlisle. In 1878 appeared the first of Johnson's express goods engines, with twenty, Nos. 1357-1376, built by Dübs and Company. The goods engines were just as finely finished as any others, and were, moreover, remarkably fast runners. On the fast goods trains between Bradford and London they were booked to average 35 m.p.h. start-to-stop. The express goods which worked these trains had steam-brakes, 5ft. 2½in. wheels, and originally 17½in. by 26in. cylinders (later increased to 18in.). Total heating surface was 1,313 sq. ft., with the usual 140lb. pressure and 17·5 sq. ft. grate area. On the Bradford fast goods turns they always carried the standard express head-code. In 1907 they became Nos. 3020-3039. Thirty more were built by Robert Stephenson and Company during 1880-81. The total heating surface was reduced to 1,223 sq. ft. but the working pressure was raised to 150lb. The construction of large numbers of 0–6–0 goods engines for the Midland Railway continued through the late nineteenth and the first twenty-two years of the present century. It was the company's standard type to the end, and in 1922 it had no less than 1,570 examples, to which be added 353 0–6–0 tank engines, most of them Johnson's design or a modification thereof. Heavy inroads on the Midland stock, made from one cause and another, seemed to have no visible effect whatever. Fifty old Kirtley goods went to the Italian State Railways in 1907, to replace some of the decrepit older stock of the Italian Southern and Mediterranean companies, then recently in liquidation. Like the true Midland engines that they were, even in strange surroundings, they lasted for a very long time. Nos. 2707-2788 (these are, of course, the 1907 numbers) were lent to the War Department during the 1914-18 war, and were used by the Railway Operating Division in France and Flanders. No. 2717 was captured by the Germans on the Peronne-Cambrai line on November 30, 1917, and was returned after the Armistice with some detail alterations made in the course of repairs by the enemy. who numbered her 01251.

Whether all the Midland goods engines in question really went to France is not certain. Some may have been returned before fighting ceased, owing to replacement by more modern engines. Certainly, three were latterly on loan to the London and South Western Railway, Nos. 2783-2785, and I recall seeing two of these, adjacent to the rather similar Beyer Peacock goods of the L.S.W.R., at Guildford in the summer of 1918. We seem to have got rather far in time and place from the Midland locomotive department under S. W. Johnson, but somehow, somewhere, one has to record these things.

From 1882 onwards, only bogie engines were built for the Midland Railway's express trains. Twenty, Nos. 1562-1581, built in that year, and ten more, Nos. 1657-1666, built in 1883, had 6ft. 9in. coupled wheels, 18in. by 26in. cylinders, 1,142 sq. ft. of heating surface, and 140lb. pressure. They became Nos. 328-357 in 1907. These, and all the succeeding Johnson 4–4–0 engines were rebuilt out of recognition in Deeley's time. In 1884 there appeared Nos. 1667-1676 with 7ft. coupled wheels, 19in. by 26in. cylinders, with Joy valve gear, 1,121 sq. ft. of heating surface, and 140lb. pressure. They were not satisfactory engines. The boilers were inadequate, and during 1886-87 they were given new ones with 1,261 sq. ft. heating surface and 160lb. pressure. Finally, during 1896-1901, Johnson replaced them by new engines having piston valves and link motion, using the bogies and transferring the numbers of the old engines. Technically, one supposes, it was a rebuilding of the more ruthless order, but it was in fact scrapping and replacement.

Twenty more 7ft. coupled expresses came out during 1885-87, numbered 1738-1757 (358-377 in 1907), with 18in. by 26in. cylinders and link motion. They had steel boilers, containing 1,261 sq. ft. of heating surface and carrying 160lb. pressure. The last of the series was named *Beatrice*, and was shown at an exhibition at Saltaire in 1887. Unlike their forerunners, they were very good engines indeed.

The famous *Beatrice* worked fast holiday trains between St. Pancras and Southend for some years, being stationed for the purpose at Shoeburyness, London, Tilbury and Southend Railway. Access to this line had been gained via the Tottenham and Hampstead Junction Railway, already mentioned, and the joint Midland-L.T.S. Tottenham and Forest Gate line, opened on July 9, 1894. As is well known, the London, Tilbury and Southend Railway, originally a Great Eastern protectorate, was merged into the Mid land in 1912.

In 1885 there was the first sign of what was to be a very remarkable development in Midland locomotive practice. Experiments had been carried out under Mr. Johnson to achieve a satisfactory arrangement of forced sanding. The first essay was to utilise compressed air supplied by the Westinghouse pump on engines fitted for air brakes, but the Westinghouse company, sensitive about occasions when some driver or other might "lose his air" and run into something, strongly objected to this sapping of their pumps' power on the Midland engines. In place of the air sending, Holt's steam sanding gear was tried, with great success. Slipping had been one of the great troubles of the single-drive express engines in Kirtley's time, but now Johnson, having fitted steam sanding to some of the 1282 class 2–4–0 engines of 1876, removed the side rods and let them kick up their heels as singles. The engines seemed to like it, and the steam sanding gear overcame slip remarkably well.

At the same time, Beyer Peacock and Company built two 4–2–2 express engines for the Limited Mail trains of the Great Northern Railway of Ireland, and in 1886 Neilson and Company built one for the Edinburgh Exhibition of that year, the Caledonian Railway taking it over afterwards.* In 1887, Johnson turned out for the Midland Railway five very fine bogie single engines, numbered 25-29 (600-604), with 7ft. 4in. driving wheels and 18in. by 26in. cylinders. They had rather deep double frames, with outside bearings to the driving and trailing wheels. They had steel boilers carrying 160lb. pressure, the same as the *Beatrice* class. Of the first batch, Nos. 25-27 were sent to Kentish Town and Nos. 28 and 29 to Nottingham. To the surprise of some people, they were extraordinarily successful, and from 1887 to 1893 no less than sixty were built, with certain variations, as follows: 1888, Nos. 30-32 (605-607), 7ft. 4in. drivers, 18in. by 26in. cylinders; 1889, Nos. 1853 and 34 (608-9), 7ft. 6in., 18½in. by 26in.; and Nos. 1854-7, 37, 1858-61 (610-618), with the same dimensions as the first two batches. At the end of the same year came three more with the larger dimensions, Nos. 1863-5 (620-622), and in 1890 one, No. 1862 (619) with the smaller. The remainder of the class all had 7ft. 6in. drivers and 18½in. by 26in. cylinders. They were Nos. 1866-7 (623-4) in 1890, Nos. 1868-72 (625-9) in 1891, Nos. 8, 122, 20, 145, 24, 33, 35, 36, 38, 39, 4, 16, 17, 94, 97-100, 129 and 133 (630-649 in 1907); and lastly, in 1893, Nos. 149, 170-8 (650-9). No. 1868 and subsequent engines had underslung spiral springs to the driving axles; the older ones had cantilever springs. The author makes apology for this stodgy mass of numbers, which whoever will may skip, but hopes that they may serve any reader who would like,

* The famous No. 123, which has survived.

and still lacks, a record of these most beautiful locomotives.

To the eye of youth—and your author's earlier days coincided with the later ones of the Midland bogie singles—there was something magical about the spectacle of one of these engines at speed. They seemed to pour themselves towards those who watched them. They were not necessarily travelling so very fast, but it seemed so. It was the effect of the big driving wheels turning without visible connecting rods. I knew the same thing, in my time, on the Caledonian engine and on a lovely North Eastern working out of York. Now, going back to the 'eighties and early 'nineties, the single-drive express engine was not such a rarity on some other lines. The Great Northern and Great Western had always had many single expresses. The most famous on the G.N.R. were the Stirling 4–2–2 eight-footers. But these had outside cylinders, and the motion of the connecting rods and cranks produced a loping effect, rather like that of a fine games-mistress leading her side to victory on the hockey field—all long legs and suspenders—while the Midland singles swept along in quite a different way. They seemed to be so effortless!

And so it was. Astonishing was the way in which they did their work in the days before enormous trains were the rule. And even thereafter they could be seen piloting the fastest trains on the West of England main line. Up the Lickey they would go in the nineteen-twenties, and one received a mistaken but insidious impression that it was the rebuilt 4–4–0 next the leading coach, and the 0–10–0 thundering in the rear, that were having the real struggle, while the bogie single in front went proudly upstairs like a queen about to be crowned.

One of the 7ft. 6in. engines of 1889, No. 1853, was sent to the Paris International Exhibition of that year. With her went a Midland carriage, a twelve-wheel pressed-steel-bogie composite coach of unprecedented splendour, which staggered the French judges by exemplifying the English soft third-class,* with lavatory access like the first-class, an unheard-of concession. They awarded the engine a gold medal. They gave Mr. Clayton's carriage the *Grand Prix*.

Proportions and line formed only a part of the beauty of these things, much of which was in workmanship and finish, visible and invisible. In land transport such qualities are rare indeed now, save in the motor cars of Rolls-Royce, which perpetuate Sir William Royce's primary object—the making of beautiful machines. In this he was a disciple of the Victorian locomotive engineers. If Samuel

* The hard third-class was still common in Scotland, Ireland, and on the South Eastern Railway, and not exceptional elsewhere.

Johnson could return and see some modern locomotives, which need not be specified, fresh from the paint-shop, he would probably have a fit.

In the late 'seventies the Midland's reputation was one of a railway running a good service of trains, very comfortable by the standards of the time, but not tremendously fast. The opening of the line from Heaton Mersey to Throstle Nest Junction resulted in the Manchester expresses running into Manchester Central station, as from August 1, 1880, instead of the crowded and inadequate London Road, already used by the North Western and the Manchester, Sheffield and Lincolnshire companies. The Midland then ran a service between London Road and Central, via Stockport. The trains were worked by the first of the 5ft. 3in., 17in. by 24in. 0–4–4 tank engines with enlarged tank capacity (1,150 gallons), which became the standard form of this class thenceforward. Previously, in 1879, the best afternoon up express from Manchester to London was re-timed to run at an average of 40 m.p.h. from Manchester to Millers Dale (where the expresses stopped for the Buxton connection) including the climb from Chapel-en-le-Frith to Peak Forest, an excellent effort. It left Manchester at 3.45 p.m. and reached Kentish Town, where tickets were collected, at 8.13, in time for a late and suitably substantial supper at St. Pancras Its fastest start-to-stop run was from Bedford to Luton, at an average of 48 m.p.h. for the short stretch of 19½ miles. That sort of thing was to be characteristic of the Midland, smart runs over short stretches, rather than the rarer rocket-flights of such a line as the Great Western, which built up an imposing reputation on its more spectacular expresses, or the Great Northern, which seemed to recognise the importance of the West Riding and Scotland in connection with London, and let much of what remained rub along somehow. Ahrons wrote somewhere that the Great Northern theme song was *Rub-a-dub-dub, three men in a tub.*

The year 1880 was one of great improvements in train service on the Midland system generally, but in 1888, when the East and West Coast companies were showing off against each other in the Race to the North, the Midland, though not " running," brought in more general improvements. Its Scotch expresses were very heavy trains, and in that year the morning down Scotchman* was divided into two. The Glasgow train left St. Pancras at 10.30 and reached Carlisle at 5.16. Intermediate speeds were as follow: St. Pancras to Leicester, 52 m.p.h.; Leicester to Normanton, 49 m.p.h.; Normanton to Skipton, 47 m.p.h.; Skipton to Carlisle, 47·8 m.p.h. There was a 25-minute dining stop at Normanton, a place which, whatever its other aspects, had refreshment rooms of great splen-

* In Scotland the " Scotchmen " were always called " Pullmans."

dour. The Edinburgh train left St. Pancras at 10.40 and ran to Nottingham at 51·3 m.p.h. Between Nottingham and Leeds it averaged 47·8, passing the Glasgow train at Normanton, where its thunderous roar stimulated the Glasgow passengers as they sat at meat. The Edinburgh passengers lunched or dined at Leeds, where the Glasgow train once more took the lead. The Edinburgh express ran at 40·25 m.p.h. to Hellifield, where there was a Lancashire and Yorkshire connection, and at 47·3 m.p.h. over the fells to Carlisle. Running down from Aisgill to Carlisle was a vertiginous romp, but fortunately the Midland's splendid bogie carriages gave the passengers a much better time than East Coast six-wheeler or Webb radial would have done.*

On the West of England main line, an express leaving Bristol at 9.35 a.m. connected with the 10.30 St. Pancras to Glasgow train, and with the corresponding Edinburgh train at Leeds. Its fastest stretch was from Bristol to Gloucester, at 48¼ m.p.h. The fastest train on the Midland at this time was the 2.0 p.m. Manchester express, which averaged 53 m.p.h. to Kettering, 52 m.p.h. to Nottingham, 44·8 m.p.h. to Millers Dale, and 40·75 m.p.h. to Manchester.

Noteworthy on the Midland system was the importance of stations like Millers Dale and Hellifield, on the borders of remote mountain places, but providing connection to and from large towns. Hellifield is perhaps a rather bleak spot, especially when a certain kind of wind is blowing, but at Millers Dale, below the great limestone ridges and over against the grey village, straggling uphill, stands to this day a very handsome station for the benefit of the Buxton passengers. In the past, the hierarchy of Midland stationmasters had a reputation for producing "characters." And the last time I was at Millers Dale, not so long ago, my attention was suddenly drawn from the old Johnson tank engine on the Buxton train to an enormous wasp, about two feet long, settled on the artistic wooden edging to one of the platform awnings. Then, some way off, I saw a giant grasshopper, similarly reposing, and there were other interesting entomological specimens scattered about the station. The stationmaster liked insects; he was proud of his station and therefore he decorated it suitably. Yes, the Midland tradition in stationmasters was safe!

A concluding note on train service. As well as those briefly mentioned, there were in 1888 marked improvements in the Liverpool-Scottish traffic via Hellifield. The Midland worked the

* In the "Race to Aberdeen" of 1895, an enraged gentleman complained bitterly of the speed and violent motion, which had made his servants terribly sick.

expresses through from Liverpool. But the Lancashire and Yorkshire, in those days, had a second-class, and meant to see duty done by it. So the through trains had each a solitary L. & Y. second-class carriage sandwiched among the Midland vehicles. With memories of the older L. & Y. coaching stock, one wonders whether contemplation of the Midland third-class next door did not sometimes cause thoughtful pondering among the second-class travellers!

Chapter Seven

FIN DE SIECLE

ALTHOUGH the main form of the Midland Railway system had been completed with the opening of the Settle and Carlisle line in 1876, several expansions took place thereafter. Most of these, except the Saxby and Bourne line, and some others about to be mentioned, were relatively short links, such as the Tottenham and Forest Gate line, already mentioned, giving access to the Tilbury system. From 1895 to 1899, all the St. Pancras-Southend and Shoeburyness trains were Midland-hauled, but thereafter Tilbury engines worked in and out of St. Pancras. Further, certain Great Eastern trains ran into the east side of St. Pancras, over the Tottenham and Hampstead Junction line. For many years these included all the royal trains between London and Wolferton for Sandringham. The arrangement left its mark on Victorian fiction. In F. Anstey's *Vice-Versa*, the unfortunate Mr. Bultitude, transmigrated into his son Dick's apparent identity, was borne away to school by the frightful Dr. Grimstone on a Great Eastern train from St. Pancras. We know it was Great Eastern because when he decided to run away he found he had a choice of trains to Liverpool Street or St. Pancras. "Market Rodwell" was probably Bishop's Stortford. In telling the tale, the author gave a first-rate description of the Midland terminus on a foggy night just after the great blizzard of 1881.

The Swinton-Knottingley line, joint with the North Eastern, and opened on July 1, 1879, made access to York direct, and thereafter Midland locomotives were stationed at York, including the 6ft. 6in. 2–4–0s, Nos. 56-59, mentioned in the previous chapter. In 1880, lines were opened between Nottingham and Melton Mowbray, on the Syston to Saxby and Peterborough line, and from Manton on the same line to Glendon Junction on the main line north of Kettering. This produced an alternative main line between Kettering and the North, avoiding Leicester, and many express trains were diverted to it and ran by that route thereafter. Branch lines were added from time to time; the Bedford and Northampton came in June, 1872, and the Harpenden and Hemel Hempstead branch, giving a sly prick to the lower part of London and North Western anatomy, was opened in 1877.

Occasionally it seemed as if the Midland locomotive department, for all its brigade of standard 0–4–4 tank engines, was puzzled as to how it should work some of the smaller branches, such as this one. There seemed no particular reason why Hemel Hempstead should have an ex-Yarmouth and North Norfolk engine, taken

from M. & G.N. stock, but so it was, and such practice was not new. The Dursley and Midland Junction Railway in Gloucestershire was opened in 1856, and taken over by the Midland in 1861. with something resembling a hot-chestnut barrow for motive power The Midland replaced this, which on closer inspection proved to be a very small 0–4–0 engine with a larger and angular saddle-tank, by a little 0–4–2 well-tank with outside sandwich frames, itself a thrifty rebuild by Mr. Kirtley of one of the "Little" North Western Fairbairn ancient tank engines. A beautiful photograph was reproduced in *The Railway Magazine* of December, 1941, showing this with a train in Dursley station. The scene was somewhat later however, than the date there stated (1856).

From the quaint to the grand. Eighteen-ninety-four saw the opening of the Dore and Chinley line, with what is still the longest tunnel, after the under-water Severn Tunnel, on a British main line: 3 miles 950 yards from portal to portal, between Dore and Totley, and Grindleford stations. It is not so very far from Chinley to Totley; up the fine Hope Valley and through the Pennines makes 21 miles. But the opening of the line gave the Midland a new and very important cut-off between South Yorkshire and Manchester and the Merseyside, as well as a route from the south to Manchester, alternative, when so required, to the older Peak Forest line.

Totley, in construction, was a wet tunnel. The *Manchester Guardian* remarked at the time that every man seemed to possess the miraculous power of Moses, for whenever he struck a rock water sprang out of it. In one heading, the flow was reckoned at 5,000 gallons a minute. The eastern and western headings met on October 19, 1892; the line was opened for goods traffic on November 6, 1893, and for passengers on May 13, 1894. The second tunnel on the Dore and Chinley line, Cowburn, at the western end, penetrated the limestone of the Peak watershed and was fortunately dry, but extremely tough going in construction, even with the great improvement of drilling equipment since the early days of tunnelling. With a length of two miles 182 yards, Cowburn became the third longest tunnel on the Midland Railway. Owing to the incidence of Totley and Cowburn tunnels, more than a quarter of the Dore and Chinley line is underground.

During the 'nineties, the Midland made considerable coaching improvements, not on quite such a ruthless scale as that of the late 'seventies, but rather in respect of the best express trains. The Pullman cars were becoming old-fashioned, and there was a new public demand for diners on the business expresses and on the Anglo-Scottish services. In 1888, the Manchester, Sheffield and

Lincolnshire Railway built first-class dining cars which it ran jointly with the Great Northern between Kings Cross and Manchester via Retford and Sheffield, on trains which were in direct competition with the Midland. In 1891, the Great Eastern put on a dining service for all three classes on the York Continental, but the northern lines—even the Midland—hesitated to adopt such a levelling practice for a while. In 1892, Mr. Clayton built first-class dining carriages for the Midland, and thereafter it became increasingly a "diner" line. It might have been expected that Derby drawing office would be influenced by Pullman design—all the sleeping cars, except some six-wheel family sleeping saloons for hire—were Pullmans, though now Midland-owned. But the first Midland diners were very strictly in the Midland coaching tradition, and outwardly the bodies were extraordinarily similar to those of the old twelve-wheel composite coaches of 1875-6, with the same three-window arrangement as it had for compartments, and the same quasi-Great Western form of clerestory roof. Inside, there were single seats on each side of the central gangway, very comfortably upholstered in green morocco leather. The bogies were six-wheeled, of the pressed-steel type then coming into favour.

These and subsequent early Midland diners were not gangwayed for connection to corridor coaches, of which the Midland company was shy for some years; passengers wishing to take meals on the journey travelled all the way in the dining carriage. This practice remained characteristic of the Midland thereafter, even when Clayton was at last induced to build corridor trains. It kept the weight down when the dining carriage served also as a coach. For the summer service of 1893, the Midland, simultaneously with the East and West Coast companies, added dining arrangements to the Scotch expresses, admitting third-class passengers to these. The Midland ran the carriages in pairs, first- and third-class with kitchen to each, and sent some of them to Scotland for the joint services. The designs were similar to those of 1892, very coachlike outside, and undoubtedly provided the best third-class accommodation yet seen. Lighting was by oil gas, in the huge inverted-column pendants then generally used for clerestory carriages. Absence of corridors, in the later sense of the term, made possible the arrangement of full-width kitchens, with Fletcher-Russell oil gas cookers, one to each vehicle. They were gangwayed together, kitchen-to-kitchen. A quaint feature of the furnishing was the provision of coat-hooks on the inside of the deckrail (immediately below the clerestory), nicely calculated for the skirts of the suspended garments to slap the passengers' ears when rounding curves at speed. A pair of diners, Midland and Glasgow and South Western Joint Stock, ran on the 1.30 p.m. Scotchman (or "Pullman") daily in each direction, starting on July 3, 1893.

In 1896 a new arrangement of windows was adopted, that used thereafter and for some years by the L.M.S., with two square windows to each section, one of them a drop-light. The six-wheel bogies were perpetuated, and the standard body length was 60ft. The company won some publicity by calling in Gillows the furnishers to upholster and decorate one of the 1896 dining carriages *regardless of cost*, which was faithfully done. The result is illustrated from an old photograph discovered in the library of the Science Museum, South Kensington. Comment is needless, save that the trimmings included apple-green satin, a material not often found in railway carriages.

In the following year, some very magnificent coaches and diners were built for the business expresses between St. Pancras and Manchester. All the vehicles were 60ft. twelve-wheelers, and a new, very imposing convention was observed in design. They were somewhat emphatically unlike Clayton's earlier work; the bodies were panelled in rectangular mouldings, the windows were rectangular also, with top-lights. The roofs, however, followed a deep semi-ellipse, broken to form a handsome clerestory. The latter feature seemed to grow from the body, by reason of the end panels being continuous from top to bottom. The sides of the clerestory were red, like those of the body. The new contour, which, slightly modified, became standard practice nearly to the end of the Midland's separate existence, gave the carriages a very agreeably full-bodied appearance, though in fact the weight was not materially increased. Even the new Manchester trains were still non-corridor, except for purely internal passages leading to smoking compartments and kitchens on the diners, and to lavatories on some (though not all) of the coaches. It may be remarked that at that time many people—severely ascetic men and hypersensitive women—strongly objected to publicity of convenience. Further, the corridor was regarded as an invader of privacy. So the Midland did its best to please everybody. Not until the very end of the century did corridor trains appear on the Anglo-Scottish services.

Even at the turn of the century the company remained faithful to Pullman type sleeping cars, and as the existing specimens were now about a quarter-century old, some new ones were ordered from America and erected at Derby from prefabricated components in 1900. Externally, they were characteristically American, apart from the lack of vestibule gangways, and had many of the favourite features of Pullman's works practice, such as paired windows with common transomes. But the pressed-steel bogies were of the standard Derby type, and so was the gas lighting equipment, which had the lamps in the lower decks, like those of the new " clerestory-balloon " coaches designed by Clayton. Also, they had lower berths

only, six of them in a general saloon with a central gangway and a lavatory-smoker *à l'Americaine*. The other half of the car had a side corridor with four sleeping compartments, one of them a double. In spite of their American construction, the Midland styled these sleeping *carriages*. By this time, apparently, " car " denoted not only American origin but also American antiquity. These 1900 Pullman sleepers lasted a long time. The author encountered one on a night express in 1926, and, soon after, several were lent to the Great Western. That company, though an early user of sleepers (1877) seemed somehow to be subject to shortages now and then. At that same time, in the late nineteen-twenties, I used to see an ex-London and South Western sleeping car in the 9.50 p.m. West of England express at Paddington. The Midland Pullman type was not long for this world when the Great Western had done with it. One ended it days as a yard shed at Chinley.

Another curious feature of Midland coaching practice in the 'eighties and 'nineties of last century was the company's affection for the six-wheel coach, which it continued for years to build simultaneously with bogie vehicles. There were even quite considerable numbers of six-wheelers built by both Clayton and Bain to the massive contours of the largest bogie carriages. They were common between Leeds and Morecambe. Clayton's Midland carriages exemplified the same beautiful workmanship as Johnson's locomotives. Some of them remained basically sound even when the London Midland and Scottish Railway allowed them, in the nineteen-thirties, to get into a disgusting state of superficial decrepitude before beginning to scrap them. It was hard, then, for one who had not known them in their prime, to realise what beautiful and dignified carriages thev had been. This is the sort of thing which it has lately been fashionable to blame on British Railways, but the rot began on the L.M.S., and before 1939 at that.

Two very agreeable features of the special vehicles for the Manchester expresses in 1897 (apart from the 6ft. 6in. third-class compartments) were the heating and the communication systems. At that time, the ordinary British train depended in winter on foot-warmers, and anyone meeting with accident, serious illness or outrage while travelling normally had, if still sufficiently active, to grope outside the carriage window for the wretched communication cord, remembering, in whatever emergency, that it was on the right-hand side of the train only. The new Midland expresses had an electrical communication system, and they were steam-heated from the engine. A good thing one remembers, and which was used also by the London and North Western, was the provision of a special radiator under a brass plate at the bottom of the door-space. It really seemed as if that vicious draught, which so easily

invades the British side-door type of carriage, quailed at contact with the Midland's hot plates and retreated outside again.

In fairness to other companies, it must be admitted that the Midland was not a pioneer, either in steam heating or improved communication. W. W. H. Preece, F.R.S., had installed an electrical system of communication on certain London and South Western trains as early as 1864. The first Great Western corridor train, built in 1891, had both steam heating and electric bells, and also an emergency release, accessible to passengers, of the vacuum brake. The latter was reached by a wire outside, instead of the piped chain of later days. It can be safely said, however, that the Midland, during this time, maintained its reputation for having unusually comfortable trains, and if Mr. Clayton showed a certain tendency to let other people make the first experiments, there was virtue in his caution.

New carriages and dining facilities increased the weight of certain trains, in spite of all efforts to keep it down, and in the latter part of S. W. Johnson's term as locomotive superintendent, there was a corresponding increase in the size and power of the express locomotives. For a long time, however, he was loyal to engines with single driving wheels. With steam sanding they were doing very well. The Midland single-wheelers were not only free-running engines, they were notably economical in fuel. With light trains—about 115 tons—the older ones would spin along on 20-21 lb. of coal to the mile. Their peculiar abstemiousness had a remarkable result in the coal strike and consequent shortage in 1912. All the singles were put on to the fastest workings, from which they had been somewhat superannuated, to make the diminishing coal available go as far as possible.

During the 'nineties, Derby turned out both 4–4–0 and 4–2–2 express engines, somewhat larger than their predecessors. More of the smaller coupled engines had been built, however, for the Lancashire-Scottish traffic via Hellifield (the L. & Y. sandwich trains, whose second-class filling has already been noted). First, in 1888, there were fifteen 4–4–0 with 6ft. 6in. coupled wheels, 18in. by 26in. cylinders and 160lb. pressure, Nos. 1808-22, and in 1891 they were followed by ten more, similar, but with increased tender capacity: Nos. 11, 14 and 80-87.

In 1892 the first of the enlarged 4–4–0 expresses came out, Nos 2183-2202. The coupled wheelbase was increased from 8ft. 6in. to 9ft., allowing for a longer firebox. Cylinders were 18½in. by 26in. and the boiler had 1,223 sq. ft. of heating surface. Working pressure was 160lb. These twenty engines were built by Sharp, Stewart

and Company, and five more, Nos. 156-160, were built at Derby in 1896. They became Nos. 403-427 in 1907.

Meanwhile, in 1893, five more bogie singles appeared, Nos. 179-183, with 7ft. 6in. driving wheels, 160lb. pressure, and 19in. by 26in. cylinders with piston valves, the first appearance of these on the Midland Railway. In 1896, five more came out, Nos. 75-77, 79 and 88. The series of ten became Nos. 660-669 in the 1907 renumbering.

For the opening of the Dore and Chinley line, fifteen 4–4–0 with 6ft. 6in. drivers, 18½in. by 26in. cylinders and 160lb. pressure were built in 1893. They (Nos. 2203-2217) were followed by thirty more, which went to the Settle and Carlisle line: Nos. 184-199 in 1894, 161-4 in the same year, and 230-239 in 1895. These were subsequently renumbered 428-472. In 1894, forty 6ft. 6in. 4–4–0s went to the Midland and Great Northern Joint. In 1896, as previously remarked, something happened to the 7ft. 4–4–0 engines of the 1667 series with Joy valve gear, which, if it were not an outright scrapping and replacement by their own designer, was at least some sort of an apotheosis, or a metabolism, the current Nos. 1667-1676, with piston valves, having practically everything new, starting, as was proper, with the main frames. Ten more were built in 1897, Nos. 150, 153-155, and 204-209, at Derby, and from Sharp, Stewart and Company in 1899. Cylinders were 19in. by 26in., and the boilers had 1,223 sq. ft. of heating surface, with 160lb. pressure. In 1898 appeared a new class of 7ft. 4–4–0 locomotives with piston valves and the coupled wheelbase enlarged to 9ft. 6in., allowing for further enlargement of firebox. Nos. 60-66, 93, 138 and 139, built at Derby in 1898, and Nos. 67-69, 151 and 152 in 1899, had 19½in. by 26in. cylinders, and 1,233 sq. ft. of heating surface, to which the firebox contributed 128 sq. ft. Apparently, what Mr. Johnson made up on the firebox he considered he could afford to lose on the tubes. Nos. 165-169, built consecutively in 1899, had the cylinders reduced to 19in. and, in the way of steam locomotives' foibles, were considerably better engines than their immediate predecessors. In 1901 more were built with 19in. cylinders, Nos. 805-809 and 2636-2640 at Derby, and Nos. 2591-2600 by Neilson, Reid and Company. The Derby engines had the tube heating surface reduced to 1,077 sq. ft., and the Neilsons still further to 1,065 sq. ft. This habit of reducing heating surfaces at the end of last century was by no means peculiar to the Midland; Patrick Stirling had it on the Great Northern. Some of the Midland engines, nevertheless, were responsible for very fine work in their day, while loads remained limited, and as we have already seen, the subsequent rebuilding in Deeley's time really liquidated their former identities, so one cannot fairly record their reaction to twentieth-century loads.

In their original form they were to be found all over the Midland system, between London and Carlisle, and on the West of England line to Bristol. In 1907, the 60 class was renumbered 523-537, and the 19in. engines became Nos. 538-562. These were the last of Johnson's smaller-boilered 4–4–0 engines to be built. The big ones, which appeared in 1900, and the first of the famous three-cylinder compounds, can be more conveniently dealt with in a following chapter, together with R. M. Deeley's development of these.

Johnson, however, had not done with the bogie singles, which were popular with both enginemen and public for their fast running, low fuel consumption, and handsome appearance. During 1896-7 there appeared five 7ft. 9in. engines with 19½in. by 26in. cylinders, numbered 115-119. The boiler had an enlarged firebox contributing 128 sq. ft. to the total heating surface of 1,233 sq. ft., and the working pressure was 170lb. The bogie wheels were increased in diameter to 3ft. 9½in. Ten more were built in 1899, Nos. 120, 121, 123-128, 130 and 131.

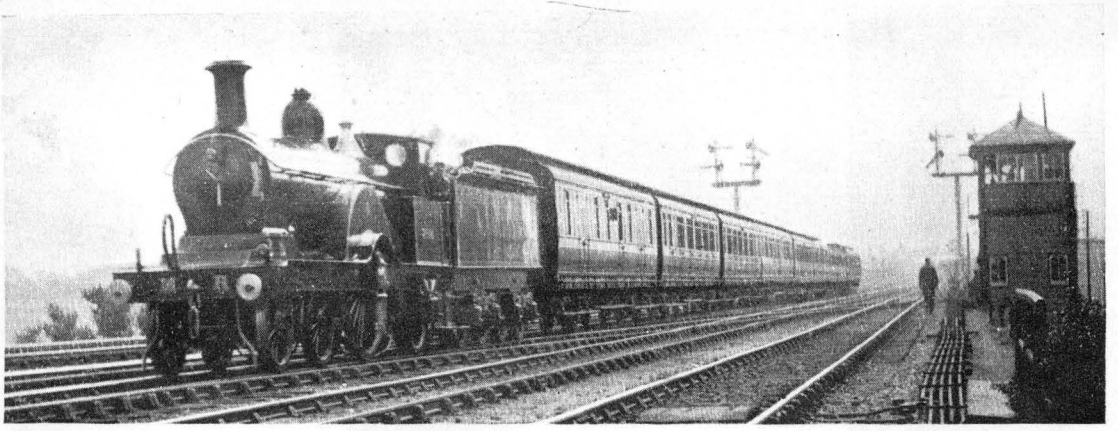
In the author's opinion, these were the finest of all the Midland bogie single engines, as well as the most successful, not only of singles, but of all Midland express locomotives built during last century. Their appearance scarcely needs description, even after many years. If it could be criticised, it were because the cab was by now becoming rather noticeably small in proportion to the rest of the engine. According to usual convention, the after saftey-valve casing, the spring balances to the dome safety-valves, the driving splasher beadings and the big driving axleboxes each side were highly polished.

Ahrons recorded the first allocation of the 115 class as follows: Nottingham, 115, 120, 121, 122 and 123; Kentish Town, 116-118, and, briefly, 130 and 131; Bristol, 119 and 128; Birmingham, 126; and Derby, 127. Charles Rous-Marten recorded a maximum speed of 90 m.p.h. with No. 117, with speed in excess of 80 m.p.h. for over 13 miles. Ahrons recorded a remarkable job done by No. 125 with the then astonishing load of 325 tons from Kettering to Nottingham. It is not an easy road, undulating, and beginning with a rise of five miles at 1 in 132 and 1 in 160, which the engine surmounted in 11 minutes from the dead stand. She made Nottingham in 60¼ minutes for the 51¾ miles (booked time 59 minutes), and would have been on time but for a relaying slack at Widmerpool, on the falling grade to Nottingham, which cost 1¼ minutes.

An ancient jibe at the Midland, a favourite one with the London and North Western, was that if a Midland train made any sort of a load, one immediately added a pilot engine. It was not un-

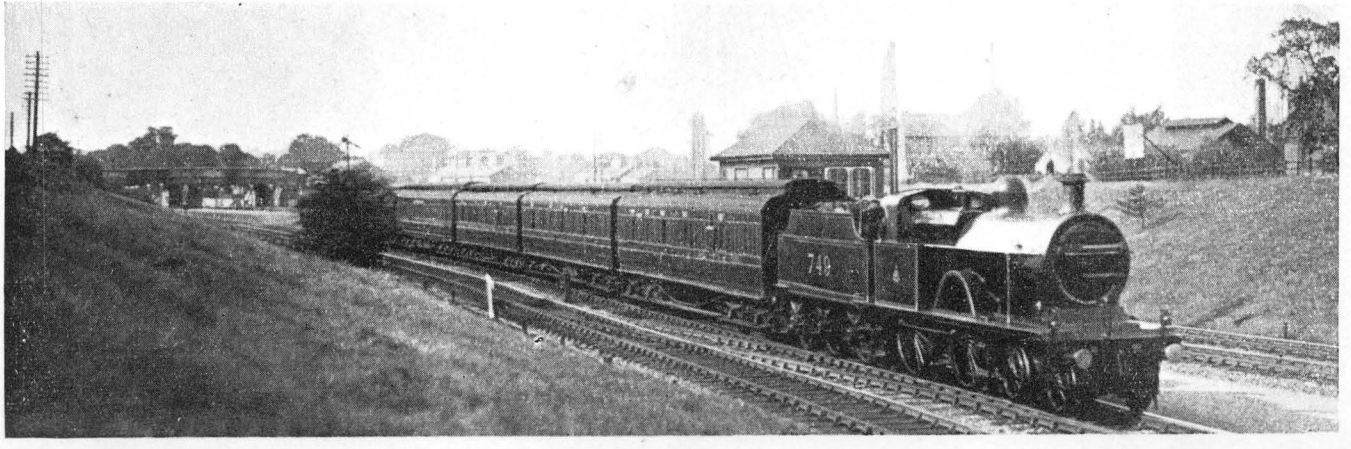
Right: Down Scotchman in the early nineteen hundreds, with Johnson "Princess" class bogie single heading a train of Clayton's rare corridor coaches.

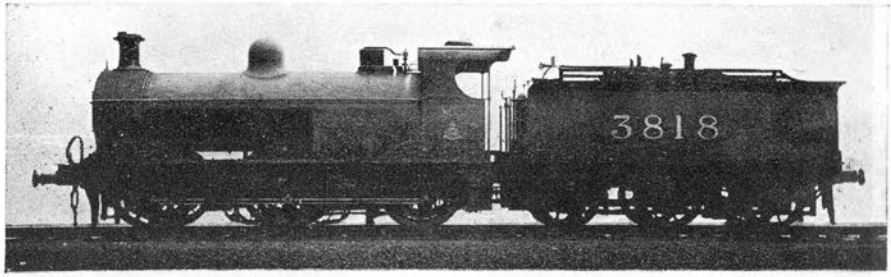
[*H. Gordon Tidey*



Below: Up Manchester express, hauled by Class "3" rebuilt Johnson express engine No. 749 and comprised of Bain corridor carriages and diner.

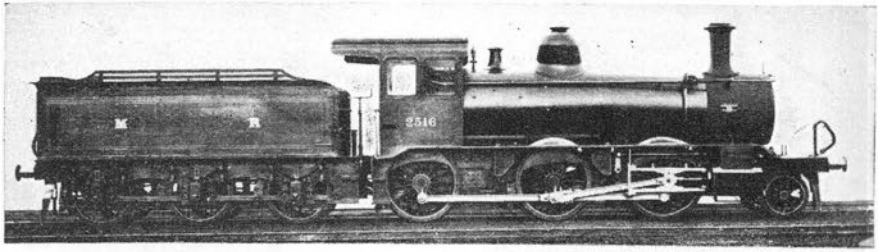
[*H. Gordon Tidey*



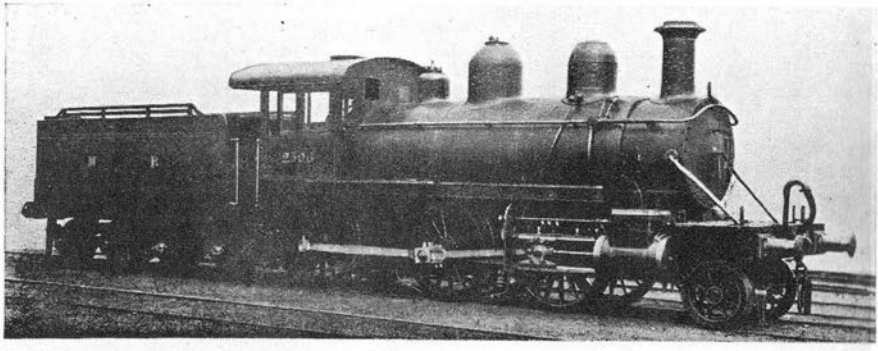


[*British Railways*

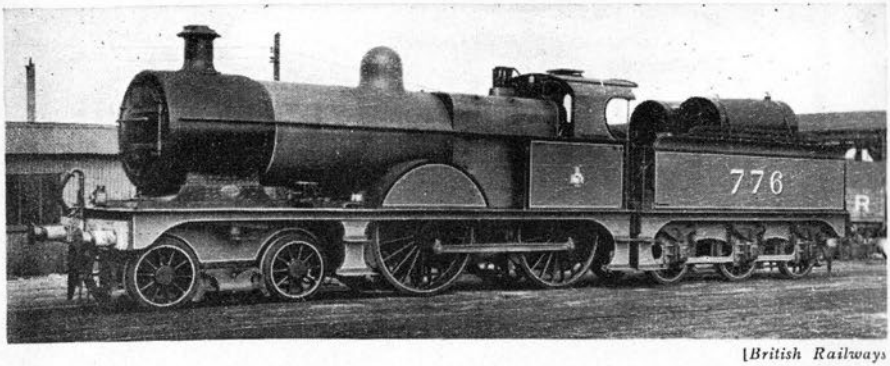
Standard Deeley goods engine as originally built in 1906, (No. 3775 was the first of the class). Belpaire fireboxes were used in rebuilding and in later construction. No. 3818 was withdrawn in 1950, as British Railways No 43818.



Mogul goods engine No. 2516, built in 1899, during the great locomotive shortage, by the Schenectady Locomotive Works, U.S.A.



No. 2506, one of the more numerous Baldwin goods engines, also built in 1899. Except for the buffing and drawgear, and the shape of the tender coal rails, this design was entirely American.



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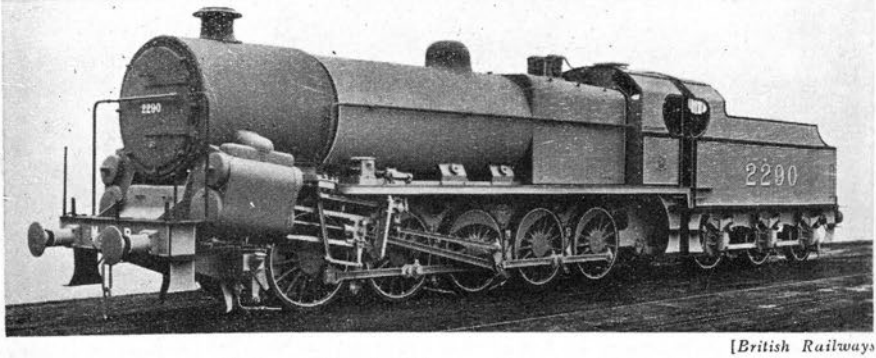
Large Johnson 4-4-0 express engine No. 776 (Class "3"), rebuilt in 1910, and equipped for oil burning in 1921.



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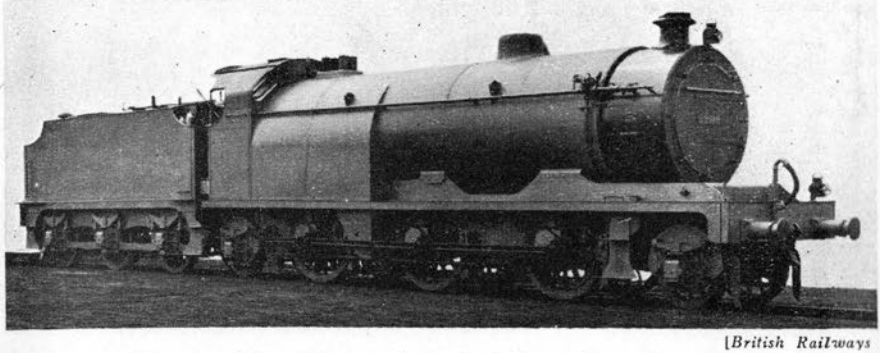
The famous four-cylinder 0-10-0 banking engine No. 2290, built at Derby for banking on the Lickey Incline in 1919.



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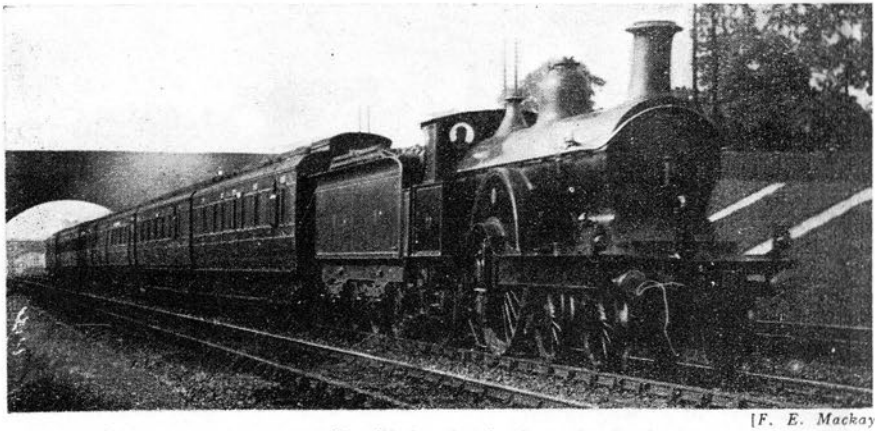
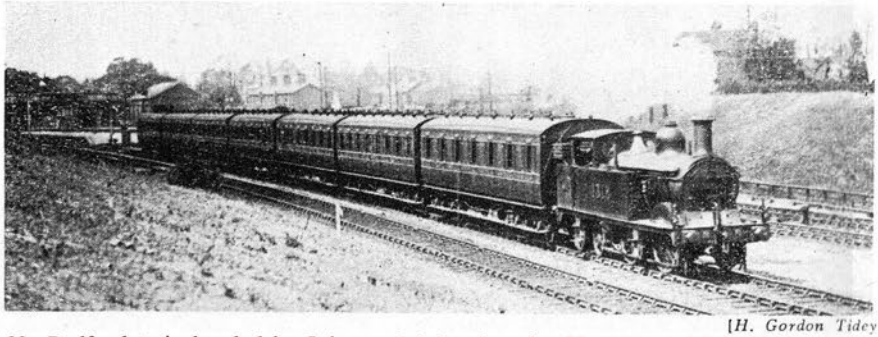
Paget's Prodigy: Cecil Paget's experimental 2-6-2 engine with eight single-acting cylinders and sleeve-valve distribution, built at Derby during 1906-7. Though numbered 2299, it was never in regular service.



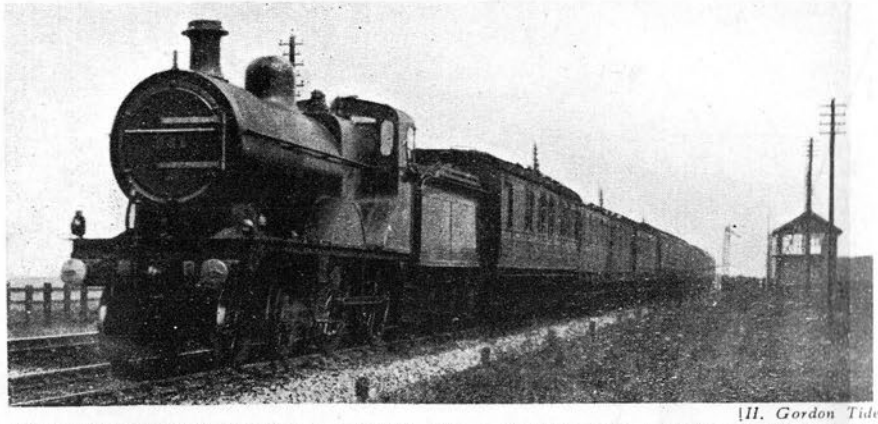
[F. E. Mackay

Up Manchester express near Mill Hill, headed by large bogie single No. 20; corridor carriages and diners by David Bain.



[H. Gordon Tidey

Up Bedford train headed by Johnson 0-4-4 tank engine No. 1318; wide-body suburban carriages by David Bain.



[H. Gordon Tidey

Manchester-Liverpool train near Hunts Cross, Cheshire Lines; Midland Class "2" rebuilt 4-4-0 engine No. 381; C.L.C. carriages (assorted) preceding Midland through coaches.

justified, though the North Western was not averse from piloting itself. But on the occasion, just quoted, with No. 117, Kettering could not produce a pilot, and the train engine showed what she could do without one. The line from Kettering to Nottingham, beginning with the rise already described, contains successive stretches ranging from 1 in 143 to 1 in 200 against the engine in the down direction. No. 117's style was further disciplined by a 25 m.p.h. slack at Melton Junction, followed by 3¾ miles up at 1 in 200. This same engine, on another occasion with a down Scotchman of 242 tons, ran from Hendon (pass) to Kettering, 63 miles, in 63 minutes 29 seconds.

In 1907 the 115 class was renumbered 670-684. No. 118, painted in Midland colours and with her old number, is preserved at Derby.

In 1900 there appeared the last single express engines to be built for the Midland Railway, bringing the total of the 4–2–2 type to 95 examples. These were Nos. 2601-5 and 19-23. Nos. 19 and 20 were renumbered 2606-7 before they left Derby Works, but never ran with those numbers. They were certainly the most imposing bogie single engines ever seen on a British railway, and aroused the greatest enthusiasm among those who had heard of their coming and awaited their appearance. Driving wheels were 7ft. 9½in. in diameter, the largest ever used on the Midland, and the cylinders were 19½in. by 26in. The boiler had a total heating surface of 1,217 sq. ft., of which 147 sq. ft. was in the firebox, which was 8ft. long, and the working pressure was 180lb. to the square inch, which was to become a common one during the first part of the present century. Water troughs had not yet made their appearance on the Midland Railway; possibly someone considered their use a nasty, messy habit, such as decent people associated with the London and North Western and suchlike abandoned parties. The new single expresses, to make up for their lack, had what were by contemporary standards really enormous tenders, of 4,000 gallons capacity, and mounted on a double-bogie frame having two-point suspension trucks with a single inverted spring and compensating lever between each pair of axleboxes each side.

Engine No. 2601 was named *Princess of Wales* and went to the Paris Exhibition of 1900, where she stood in the Engineering Annexe at Vincennes adjacent to the Great Eastern's *Claud Hamilton*, Webb's *La France* from the London and North Western, and a most puissant-looking North Eastern 4–6–0. These British engines made a marked contrast with the de Glehn compounds of the Nord, Est and P.L.M. companies, with an Italian Southern 4–6–0 mounting the cab forward and the chimney aft, and many other exotics.

It was not, however, a very happy exhibition; the Engineering Annexe was so far away that many people never went to see it. Furthermore, we were at that time a very unpopular nation, Continental and American sympathy being almost solidly for the Boers in South Africa.* The French had a domestic row, too; questions were asked in the Chamber on why the French State Railways should think fit to purchase an American engine, which they impudently exhibited, while the French companies were forbidden to purchase abroad.

To return to the happier atmosphere of the Midland Railway: Nos. 2601-4 worked from Kentish Town, displacing Nos. 130-1 of the 115 class, which went to Derby and then worked on the West of England line. Nos. 19-23 were at Derby and No. 2605 was at Nottingham. Although the largest of the Midland singles, the Princess of Wales class were not, in my coldly retrospective opinion, such good-looking engines as the 115 class, or the earlier series. The tenders were too big, making the small cabs look quite fiddling, and the placing of the dome on the after ring of the telescopic boiler barrel was not entirely happy. Still, the engine-fanciers of the day were delighted. There was a bruit abroad that Johnson was going to make certain radical changes in the appearance of new express engines for the Midland (as, in fact, he did with the next lot of coupled engines), and the *Princess* brought sweet reassurance to those anxious on this score.

Before leaving the Midland express trains and engines of the eighteen-nineties, we should recall the very destructive accident of September 2, 1898. A platform trolley left in a luggage passage on a gradient of 1 in 33, on the down side of Wellingborough station, ran back and across the platform, on to the down fast road just as the 7.15 p.m. St. Pancras to Manchester dining train was coming through at full speed. (There was talk of boys monkeying with the trolley.) The postman responsible for it, and an inspector, most courageously tried to shift it from the rails, but in vain. The express engine, 4–4–0 No. 1743, had the bogie derailed by the fallen trolley. On the slight right-hand curve north of the station, it struck the diamond crossing connected with the yard approaches, and went sharply off to the left, breaking away from the tender and turning a half-somersault, to finish on its right side, facing back the way it had come.

The first three carriages passed between engine and tender. The leading one, Glasgow and South Western saloon No. 161, turned

* The great Ibsen, however, called upon to speak at a *Beastly John Bull* meeting in Norway, scandalised the company by saying thoughtfully: "But do we *really* want Kruger to win a war?"

over on the up fast road; the second, Midland twelve-wheel brake-third No. 3002, broke up completely, with bogies, frame, sides and roof scattered. The engine was very severely damaged, with the bogie and main frames fractured, the smokebox broken in and the entire superstructure—chimney, boiler clothing plates, dome casing, safety-valves, splashers and cab disrupted. All the steam was abruptly expelled from the boiler through the top of the dome. Fortunately, fire did not break out in the wreckage.

Both enginemen, and five passengers in the brake-third, were killed. Luckily, the Glasgow and South Western saloon, which was much damaged, was empty. The two diners and the trailing brake composite, completing the train, although derailed and damaged, remained upright and in line. It was the worst accident to a Midland passenger train since August 12. 1880, when seven passengers had been killed in a derailment at Wennington Junction near Skipton.

As remarked previously, Johnson continued to build his standard goods and tank engines, 0–6–0 and 0–4–4, over many years. The old Metropolitans and the Kirtley tank engines were taken off the heavy suburban trains, including those which worked through the tunnels to Moorgate, and a series of 0–4–4 tank engines built by Dübs and Company in 1895 had condensing equipment for this work. They had the usual 5ft. 3in. coupled wheels and 18in. by 24in. cylinders. The pressure was 150lb. and they had, of course, the larger side-tanks and cabs from the first. The goods tank engines were augmented by an enlarged design in 1900, with condensers for working through the underground lines to the Chatham and South Eastern Railways, via Snow Hill and Blackfriars. Wheels were 4ft. 6½in., cylinders 18in. by 26in., total heating surface 1,252 sq. ft., and working pressure 150lb. Twenty of the condensing engines were built by the Vulcan Foundry Company, and while they were the forerunners of the engines ultimately standardised by the London Midland and Scottish Railway, some of the originals were to be seen on the transfer goods via Snow Hill for the next half-century.

Still there continued the need for more and more six-coupled main-line goods engines, and at the end of 1898 the Midland, like several other railways, notably the Great Northern and the Great Central, found itself in an embarrassing position. Derby Works was full up with work, and so were all the British manufacturers, for the locomotive building industry was in the midst of a tremendous boom, which coincided with a well-timed strike. America was the only possible source, and, as the need was urgent, the Baldwin Locomotive Works and the Schenectady Locomotive

Works were chosen to supply thirty, and ten locomotives respectively, following to a great extent their own standard designs, such as were being built at that time for such widely varying foreign railways as those of Finland and Egypt.

Baldwin and Schenectady obliged with some typical Yankee 2–6–0 goods, with 5ft. coupled wheels, 18in. by 24in. cylinders, and 160lb. pressure. They were thus very small engines by American standards, and scarcely giants by British, but they made a good, handy sort of engine in an emergency, and all were delivered during 1899. The Baldwin engines, M.R. Nos. 2501-10 and 2521-40, were American in every respect save the shape of the tender coal rails, which had Johnson's usual reverse-curve at each end, and in the standard British buffing and drawgear. They had, of course, bar frames and outside cylinders, the latter with slide valves on top worked through rockers. The boilers were parallel, with a big dome on the second ring, crowned by uncased Coale pop safety-valves, and an American chime whistle was mounted on a small dome in front of the cab. The sandboxes were of dome shape, on the first ring, and the smokeboxes cylindrical, on a saddle, with prominent stays to the front of the frame. The chimneys were parallel, with rather massive caps. The tenders were of double bogie type. The cabs were large, with side windows.

In the ten Schenectady engines, Nos. 2511-20, there were some concessions to British practice. The platforms were lower, with small splashers and with the sandboxes below, while in the tenders a real attempt was made to produce the Midland six-wheel article. The boilers, however, were tapered, with the dome on the after ring, in bellmouth casing, with one pop safety-valve on the dome and one over the firebox. The chimneys were tapered, of cast iron. The whistles in these engines were the usual English squeakers. Again there was a big side-window cab, but at least half the closed part was taken up by the back of the boiler. Very welcome, however, in both the American designs, was the extension of the cab roof, right back over the tender footplate. A Johnson cab could not be beaten for drips down the backs of the enginemen's necks in bad weather.

The Schenectady Moguls were sent to Wellingborough, and for some years were a common sight on the coal trains to Brent sidings, Cricklewood. The Baldwins were equally divided between Toton, Sheffield and Leeds. These American goods were not popular. There was perhaps the feeling that an American engine ought to be much bigger and more powerful than our own, and these were not. Also, they were roughly built, especially by Derby standards, but in all fairness it must be said that they were pretended to be no more

than what they were, which was a set of stop-gap engines built in a great hurry for an urgent customer.

Some criticisms reached America, and apparently made people there feel sore. Feelings were ventilated in *Railway and Locomotive Engineering*, in the conduct of which Angus Sinclair held generally liberal views. In this American journal, Charles Rous-Marten quoted S. W. Johnson on the subject of the Midland Moguls, of which he said that, work for work, they consumed 20-25 per cent more coal and 50 per cent more oil than his standard 0–6–0 goods, while the repairs cost 60 per cent more. On the credit side, he observed that the American engines cost £400 less each than equivalent engines put out to British manufacturers. "There is," added the usually cagey Mr. Johnson, "another point . . . the American engines were delivered here within a few months of the order being given, yet some contracts which we let out to British firms in 1897 were not completed until February, 1900! Of course, that was largely the fault of the engineering strike, and it was the engineering strike which caused us to put out work in America." Rous-Marten, who had had experience of American engines in New Zealand, raised the additional points that the Midland enginemen would be psychologically disinclined to get the best out of the foreigners, that for hauling coal trains of 500 tons (560 American short tons), no American railway would have used such small engines, and that when they were so used on the Midland, the fuel and lubricants and repairs bills naturally went up. There was an entirely different attitude to locomotive running in the two countries. An American railway would buy big engines "off the peg" and work them to death, while a British company "most carefully tended and cherished" engines thirty to forty years old. Of course, nowhere was this more prevalent, among large British railways, than on the Midland. Rous-Marten was not at all sure that this was a good thing. It meant crowding a railway with worthy old fossils that were outclassed long before they were worn out.

Anyway, the American Moguls on the Midland were allowed to wear out no later than they needed. The last one was withdrawn in 1915. It is odd to compare the different fates of American locomotives and American cars on the Midland Railway. The old Pullman cars, dating back to 1874-5, seemed to be indestructible except when, as happened at Hunslet, Leeds, on October 29, 1882, one caught fire. This may have been caused by one of the portable reading lamps which passengers often took with them on night journeys. One passenger was killed. Those lamps were pernicious things, which hooked with a spike into the upholstery, but their use, afterwards forbidden, was a natural consequence of the miserable lighting on the ordinary trains of those days. The irony of this

case was that the Pullmans were exceptionally well lighted, but until the coming of electric light in trains, it was not possible to provide individual sleeping berth lamps. It must be added that Dr. Arthur, who died, was drunk at the time and had been smoking in bed.

To conclude our picture of the Midland Railway in the nineteenth century, let us take a brief survey of Derby Works, which sprang from the small repair shops built at Derby by the old Birmingham and Derby Junction, Midland Counties, and North Midland companies, and united into one great establishment during Kirtley's time on the Midland Railway. By the eighteen-nineties, the works had taken on much of the form which we know today. In 1844, engines and carriages were dealt with together, on a site covering 8½ acres, of which only 2½ acres were occupied by buildings. By the middle 'nineties, the locomotive works alone covered 80 acres, with 20 acres of buildings, on a diamond-shaped site bounded by the passenger station, the main line to the south (west and south-west side) and by the Derby Canal and Corporation Gasworks on the north-eastern and eastern sides respectively. The carriage works was now on another site, of 86 acres, with 24 acres of buildings, to the south of the locomotive works and east of the main line to Birmingham and the West of England (the old Birmingham and Derby Junction). In the middle of the locomotive works a single great block contained the erecting shop and the paint shop, with the tool and fitting shops, the brass fitting and grinding shops, between them. On the east side were two foundries, the smaller one devoted entirely to the casting of chairs for the permanent way, two gasworks (oil and coal respectively), the boiler shop and wheel and axle shops. The main stores were placed at the north end, near the passenger station. The tender shop was located in the angle of the two main blocks of erecting shop and boiler and plating shops. There were four running sheds within the works precincts, the largest and newest being an oblong building containing two turntables, with the stalls and pits radiating from them, and room for fifty engines. Three older sheds of pure roundhouse type were between the main works buildings and the passenger station which, as now, was between the locomotive works and the neat and pleasant town of Derby. It is indeed an incomparably nicer place than those locomotive-manufacturing towns which did not exist before the coming of the railway, and it is favourably placed in relation to the prevailing winds.

In 1894 the Midland Railway had 2,420 locomotives, and about that time Derby Works built about forty new engines yearly and re-boilered 120. The offices were placed at the northern end, but were not particularly imposing. The showy building against which

Midland locomotives were ranged to be photographed was in fact a brewer's bottling store, at Kentish Town, which to this day reminds an Oxford man vaguely of something about Balliol. In Johnson's time, new engines were frequently photographed against it. Several locomotive works had their favourite buildings for this purpose. One recalls Joseph Beattie's rather Frenchy drawing office at Nine Elms, the old clock tower at Crewe, and a wonderful crumbling mosque which the North Western Railway of India contrived to get almost on top of its tracks at Moghalpura.

But the Midland was a railway of many landmarks, beginning with St. Pancras' pinnacles and the handsome rotundæ of the Kentish Town gasworks, some of them of its own like the former, others incidental like the latter, yet still characteristic of the railway. In the Midlands and north they ranged, and still do, from Chesterfield's crooked spire to the grim, flat-topped mountain of Wild Boar Fell, and there were many sorts of place less agreeable than the really beautiful station houses of the old North Midland line, many great features less stately than the viaducts between Settle and Carlisle.

The company's structures were in many ways outstanding and well arranged to boot. Excellent were the station name-boards, which were duplicated and mounted at an obtuse angle, one half to the other, so as to give easy perception to passengers from either direction. The signal-boxes were very distinctive, with their windows in multiples of four, having diagonal top-quarters to the frames, vertical boarding above the gallery, horizontal below, and on the roof the *pickelhaube* finials which also adorned the signal posts. Some stations achieved a quaintly rustical appearance through their fences of diagonal wooden rails, a form which was also often to be seen on the stations of the company's south country ally, the London and South Western.

In little things as in big ones, the Midland was never a commonplace railway.

Chapter Eight

THE TROUBLED YEARS

THOSE of us who were young people, or small children, in the years 1900-1914 are inclined to look back with some wistfulness. It is an insidious habit, and can have serious results, as the unfortunate Mrs. Lot discovered in her last moments, but the Edwardian years had a surpassing grace and beauty. Life was exuberant, whether one lived on earnings or funds. The railways were at the zenith of their monopoly. Some were excessively bad, and some, like our Midland, were very good indeed.

Yet, for the Midland company, it was a strangely troubled time Old and great servants, like Johnson and Clayton, passed into retirement; other men were promoted to high office, and all was not always happy in the Midland house. Within a few years, there were two changes in the leadership of Derby Works. Between the death of King Edward VII and the outbreak of the Kaiser's war, there were two very terrible accidents on the Midland, both through serious railway faults.

At the turn of the century, S. W. Johnson was still in power, so we can conveniently carry on the story from the locomotive angle. In the last chapter, I mentioned the rumours that were abroad in 1900 about changes in locomotive design policy at Derby, and the curious relief with which the more diehard students reeeived the superb *Princess of Wales*. In that same year of 1900, there appeared the first evidence of the big-boiler policy initiated by John McIntosh of the Caledonian in 1896, with the Dunalastairs.

To cut down double-heading north of Leeds, which had become excessive even by Midland standards, Johnson built for the Carlisle road in 1900 five 4–4–0 express engines, Nos. 2606-10. They had 6ft. 9in. coupled wheels and 19½in. by 26in. cylinders, with piston valves. The bogies were compensated, and the bogie wheels 3ft. 6½in. in diameter. So far they were characteristic Johnson engines. But the telescopic boiler had an inside diameter (second ring) of 4ft. 8in., and its centre-line pitched 8ft. 3in. above rail level. For the first time on the Midland Railway the Belpaire firebox was used. Johnson had been interested in this for some time, but being an artist as well as an engineer he would not use it until the size of the engine justified its appearance, a small engine with that massive flat-top casing being in his eyes an abomination. The new boiler had 1,374 sq. ft. of heating surface in the tubes, to which the firebox, 8ft. long, added 145 sq. ft., making a total of 1,519 sq. ft. The grate area was 25 sq. ft. As well as the Belpaire casing,

the dome and safety-valve arrangements altered what had been the characteristic Johnson line. Hitherto, all Johnson engines had had the safety-valves on the dome, loaded by a pair of Salter balances. The levers had been straight in the earlier, and with downward reverse curves in the later engines. A single lock-up valve had been housed in a bellmouth brass casing over the firebox. In the 2606 class, the dome was not high enough to support the Salter balances going aft in the usual way, and to have mounted them transversely, as in the old tank engines used for working down to the London Docks would have spoilt appearances. So the dome was made closed, with a round-top casing, and Ramsbottom safety-valves were mounted over the firebox, with the lock-up in front of it, a brass casing like a laterally-depressed canister surrounding all. In the cab, a return was made to the oblong panel-plate type, which had always been used for the bogie singles in any case, though not previously to the coupled express engines except in Kirtley's time, but the cab roof was semi-eliptical, the side-sheets being produced to form the curves on each side. The 4,000-gallon tenders were of the double bogie type, as on the Princesses, and weighed, with 3½ tons of coal, 51 tons 7½ cwt., almost as much as the engine, which was 51 tons 12 cwt. (In the Princesses, the tenders were heavier than the engines!) The 2606 class perpetuated the beautiful Johnson chimney.

In 1901, five more of the class were added, with numbers 800-804, and in 1902 a modification appeared in Nos. 2781-90. In these the bogies were different, having 3ft. 3in. wheels and four-point suspension, instead of the compensated suspension of the previous series. Further, they had 4,500-gallon tenders. Weight of engine was 52 tons 15 cwt., and of tender, 52 tons 10 cwt. Between 1900 and 1905, eighty engines of this handsome class were built by Johnson and his successor R. M. Deeley, with some variations. The last ten had 200lb. pressure. The complete series was as follows: Nos. 2606-10, 1900; 800-4, 1901; 2781-90 and 810-23, 1902; 824-32, 1903; 833-48, 1904; 849-69, 1905. Nos. 860-9 were the 200lb. engines, and among other modifications there appeared the Deeley smokebox door, secured by dogs instead of the central screw, and a long-wanted extension of the cab roof to the rear. In 1907 they were renumbered, in that same order, from 700 to 779. The last 30 always had six-wheel tenders. In later years, mostly at the beginning of the nineteen-twenties and in some cases after formation of the London Midland and Scottish Railway, they were rebuilt with superheaters, and, in most cases, with 20½in. cylinders. No. 717 was rebuilt in 1919, and No. 718 in 1920, retaining 19½in. cylinders. The class was intact when the L.M.S. company took over, and twenty-two survived to be taken into the stock of British Railways at the beginning of 1948. Three lasted into 1952, Nos. 816/726 (the

very last survivor, scrapped in September), and Nos. 818/728 and 833/743 withdrawn in July of that year. Like many Midland locomotives before them, they had been a very good investment.

Derby had now committed itself to the relatively large, high-pitched boiler. From 1903 onwards the standard Johnson goods engine underwent the same metamorphosis in dimensions and external appearance as the passenger engines had done, and henceforward the only engines built new with low-pitched boilers were additions to the great army of standard goods tanks. In 1902, Johnson had built two 0–4–0 tank engines. Nos. 1528-9, the first of a more modern type of "pug." They were large and powerful, as such engines went, with 15in. by 22in. cylinders, 3ft. 9¾in. wheels, 750¾ sq. ft. of heating surface, 10½ sq. ft. grate area, 160lb. pressure, and a working-order weight of 32 tons 16 cwt. Outside Walschaerts gear was used, and the side-tanks went forward to the front line of smokebox and cylinders. Except for the new semi-elliptical cab top, the outline was not typically Midland. The chimneys were plain, like those used by Adams on the Great Eastern and the South Western, and a single mounting carried the whistle and the Ramsbottom safety-valves, which were transversely set. The previous standard Johnson small shunting engines, also 0–4–0, had saddle-tanks and inside cylinders. These too had plain chimneys.

In 1901, Johnson produced what was perhaps his *chef d'œuvre*, No. 2631, the first of the long-famed Midland three-cylinder compounds. The forerunner of this fine locomotive was one which had been originally designed by Wilson Worsdell and built for the North Eastern Railway in 1893 as a T. W. Worsdell two-cylinder compound. In 1898, under Wilson Worsdell's direction, it was rebuilt by W. M. Smith with his remarkable system of compounding —one high-pressure cylinder inside and two low-pressure outside.

Smith's compound engine could be worked on starting as a three-cylinder simple engine, going over to semi-compound or full-compound expansion. A reducing valve controlled by a spring-loaded regulating valve, which could be controlled from the cab, admitted steam to both high and low-pressure steam-chests. Through non-return valves, steam at high pressure could be admitted to the single high-pressure cylinder from the low-pressure steam-chest when the high-pressure ports were closed through the position of the valves before starting. On the opening of the high-pressure ports, the non-return valves automatically closed through the pressure in the high-pressure cylinder being higher than that in the low-pressure steam-chest. Under normal conditions, the engine thus started with boiler steam in both high- and low-pressure steam-

chests, and worked compound when it was under way. By altering the controlling valve spring, the engine could be worked, in an emergency, all the time as a three-cylinder simple. Under severe conditions of load or gradient, or both, it could be worked semi-compound.

Johnson is believed to have meditated a compound locomotive in 1898, the year of the North Eastern engine's conversion, and the result appeared, as noted, three years later. In No. 2631 he used a working pressure of 195 lb. per sq. in. Pressure in the low-pressure steam-chest was from 40-60lb., varying according to high-pressure cut-off, and when working semi-compound the maximum pressure in the low-pressure steam-chest was 150-160lb. Coupled wheels were 7ft. in. diameter and the cylinders 19in. (high-pressure) and 21in. (low-pressure) in diameter by 26in. stroke. The leading coupled axle was the driving axle for all three cylinders, with the outside cranks at 90 deg. and the inside crank set at 135 deg. to the other two. The inside cylinder had a piston valve, and the outside, slide valves. There were three sets of Stephenson's link motion and the high-pressure and low-pressure portions of the engine had separate reversing gear. The boiler had a total heating surface of 1,719·8 sq. ft.

The working-order weight of this first and basic Midland compound engine was 59½ tons, of which 39 tons rested on the coupled wheels. A very large bogie tender was provided, with a capacity of 4,500 gallons and 5 tons of water and fuel. The bogies were not equalised on these, as they were in the 2606 class and the final big singles. The bogie wheels on the compounds had 3ft. 6in. diameter. Mr. Johnson built five compound express engines down to his retirement at the end of 1903, with original numbers 2631-5. The Midland tender, with them, as with the 2781 series of simple engines, swelled to its maximum dimensions. Thereafter came the eclipse of the bogie tender, for in Johnson's last year the first water-troughs appeared on the Midland Railway, at Oakley, Melton Mowbray and Loughborough. In 1907 the Settle and Carlisle line saw the introduction of troughs near Hawes Junction (Garsdale), and thereafter six-wheel scoop-fitted tenders became invariable for Midland locomotives. The Garsdale troughs are the highest in the country, and suffer badly in wintry weather. For a while they were steam-heated. In very severe conditions, a formidable ice-pack builds up, which was sufficient to derail a snowplough in the great snow-up of February-March, 1947, when, further, two engines were stuck on the troughs for a fortnight. But the Settle and Carlisle line has always been famous for meteorological oddities. To this day the Garsdale turntable has a stockaded windbreak round it because long ago one of the old goods engines, being turned, refused to stop

turning in a gale and went slowly round and round during several dark hours like the top of an immense Robinson's anemometer.

Reverting to the first Midland compound engines, No. 2631 was sent to work on the Settle-Carlisle line when she was new, and behaved very remarkably indeed. On September 5, 1902, with a 210-ton train, she ran from Hellifield to Carlisle in 79 minutes for the 76¾ miles. Blea Moor was reached in 24¾ minutes, and from Appleby (pass) to Carlisle took 27 minutes, making a pass-to-stop speed of just over 68 miles an hour. In the up direction, the same engine went up the big drag from Carlisle to Aisgill in 62 minutes (46·7 m.p.h.). It was the beginning of many years of magnificent work by these and successive compound engines.

In appearance, the compounds were somewhat marred by the shortness of the cab, for which its handsome curved roof did not properly compensate, and by the capuchon on the chimney, a hideous feature, on the real value of which engineers seemed never to be agreed, for down the years it went on and off chimneys with peculiar waywardness. On the Midland Railway, however it came to stay, to the great detriment of appearances, whatever advantages people thought they found in it.

With the end of 1903, as already recorded, Samuel Johnson retired from the office he had held so constantly for so many years. At the end of his term, he was understudied by Richard M. Deeley, who had been works manager, and was responsible for boilers and electrical equipment. The large boilers on the last Johnson engines were some of his work. Next there came Cecil W. Paget, who was assistant works manager under Deeley, and became acting works manager when Deeley was appointed assistant locomotive superintendent, preparatory to taking over from Johnson. Deeley and Paget had visited America together to study and report on workshop practice in the States. In the background, but only just so, was Henry Fowler, who had been gas engineer and chief of the testing department at Horwich on the Lancashire and Yorkshire Railway, and had joined the Midland in a similar capacity in 1900. In a garrulous moment, Johnson remarked in a railway carriage that his successor was to be, not Deeley, but Paget. The statement got about, and was denied.

On January 1, 1904, Deeley became locomotive superintendent, Paget was made works manager, and Fowler assistant works manager. In spite of their work together, Deeley and Paget were an ill-assorted pair, though both excellent men. To make matters worse, while Deeley was Paget's chief, Paget was a son of Sir Ernest Paget, Bart., chairman of the Midland company, and had

wonderful ideas of his own which he intended to put into practice at his earliest convenience. Already people wondered, without speaking, which was really the Sultan and which the Grand Vizier. In the background still was Henry Fowler, the *Lord in Waiting*.

As far as locomotive design went, the change was at first extremely smooth. As we have seen, Deeley had been in very close collaboration with Johnson, and he continued and completed the building of the big simple-expansion passenger and goods engines which had begun to appear in 1900. New design began modestly in 1904 with two steam rail motors for the Morecambe and Heysham line. The coach parts of these were designed by David Bain, who had come from the North Eastern Railway to succeed T. G. Clayton in 1902. These steam cars were characteristic of their race, then entering a rather shaky phase of popularity. They had vertical boilers and 0–4–0 engines with outside cylinders and Walschaerts gear, like the new works shunters. The coach-bodies completely enclosed the boilers, as on the Great Western rail motors then beginning to appear in large numbers. The Midland specimens were to be shortlived—one of them, suitably eviscerated, became a business carriage for the general superintendent in later years. They went down to Heysham under their own steam, and a maximum speed of 50 m.p.h. was attained.

Deeley's influence on existing design was apparent in the later 4–4–0 engines of the 860-9 series in the use of 200lb. working pressure, as already remarked, and in the outward-tapering chimneys, a singularly ugly design, which appeared also on the large-boilered goods engines.

In 1905 Deeley brought out the first of his modified Smith compound express engines, generally following Johnson's design, but with some important differences. The pressure was increased to 220lb., a very high figure for those days, and the front end was altered. The reducing and regulating valves were discarded altogether; an additional port and chamber was provided in the regulator, with a separate steam pipe to the low-pressure steam-chest, for simple expansion working. Alterations were made in the non-return valves, but the arrangement of cylinders, valves and steam-chests remained substantially the same. On moving over the regulator about 20 deg., the additional port was opened, admitting high-pressure steam to the low-pressure steam-chest, and a pilot valve admitted steam through a small port to the high-pressure steam-chest. Pushing the regulator handle further over closed the auxiliary port and opened the main ports to the high-pressure steam-chest, for full compound working. To change over to semi-compound working, while running, the regulator had to be shut,

and then reopened to the auxiliary steam position. Ahrons remarked that the Deeley regulator simplified the engine, but did not allow the variable adjustment possible with the Smith reducing valve on a heavy grade.

In leading dimensions the new Midland compound engines were the same as the 2631 class, but there were differences in the boiler dimensions. Total heating surface was reduced to 1,473 sq. ft. of which the firebox provided 151 sq. ft., the reduction being in the tubes. The grate area was increased from 26 to 28·4 sq. ft. There was a slight increase in engine weight to 59 tons 18 cwt. in working order. The cab was enlarged, and the oblong panel-plate disappeared in favour of the usual demi-splasher. A six-wheel tender, with high coal shields, and of course water pick-up, was adopted instead of the ponderous bogie watercart of late Johnson practice.

Altogether, forty Deeley compound express engines were built for the Midland Railway. The five original engines of the 2631 series were rebuilt to conform in all respects with the Deeley modified design. Deeley's first batch, Nos. 1000-1029, was renumbered 1005-1034 in 1907, and the Johnson compounds became Nos. 1000-1004. The second Deeley series, Nos. 1035-1044, came out during 1908-9. The later compounds had cylindrical front to smokebox, and the tops of the frames flush with the platforms. At the time there was an announcement that five of them were to be Atlantics, but evidently someone had a fright at the thought of such giants being let loose on the Midland. The original Deeley No. 1000 came out with a slightly tapered capuchon chimney, but the standard form in Deeley's time and thereafter, for all Midland locomotives, was a parallel chimney with a rather harsh flare, and on the tender engines, a capuchon.

Under the 1907 renumbering carried out by Deeley and referred to many times already, engines were grouped according to type. The old 2–4–0 passenger engines were numbered from 1 upwards, the simple 4–4–0 older Johnson designs and subsequent rebuilds, from 300, the bogie singles from 600, the Belpaire 4–4–0 from 700, and the compounds, as remarked, from 1000. Tank engines began at 1200 with the 0–4–4, 0–4–0 pugs were numbered from 1500, 0–6–0 tanks from 1600, 0–6–4 tanks (to be described shortly) from 2000, American 2–6–0 from 2200, and the army of 0–6–0 goods from 2300 ad infinitum. The goods had been depleted in 1906 by the sale of fifty old Kirtleys to Italy, though, so vast was the number of these engines, that there was no apparent diminution, even of the veterans. A complete list of those sent abroad was published in *The Locomotive* of May 15, 1908, with their Midland numbers, and those allotted them, successively, by the Rete Meri-

dionale, and the Italian State Railways. Many, however, worked for a long time in Italy with their Midland numbers, and even the familiar initials M.R. They were shipped to the Continent via Boulogne and sent over the Mont Cenis.

In 1907 Deeley built ten very fine 4–4–0 simple engines with inside cylinders for the Carlisle road, Nos. 990-999. No. 999 was in fact the first of the series. They were intermediately contemporary with the compounds, the last of which (in the original Deeley form) came out in 1909. They had 19in. by 26in. cylinders and 6ft. 6½in. coupled wheels. In boiler power they rather exceeded that of the compounds, with the same (original) 220lb. pressure and 28·4 sq. ft. grate area, but with the heating surface raised to 1,404·6 sq. ft. (tubes) and 152·8 sq. ft. (firebox), giving a total of 1,557·4 sq. ft. Externally they were very similar, apart from the lack of outside cylinders, and the tenders were the same.

Deeley gave them a new valve gear of his own, without eccentrics, the motion of the expansion links being derived from the opposite cross-heads. A curiosity was the spacing of the cylinders at 2ft. centres, with the crankpin centres half an inch closer together. The connecting-rod small ends were provided with gudgeon pins having ball-and-socket joints. Like the compounds, the "nine-ninety-nines" later had their pressure reduced to 200lb., and they were also equipped with superheaters after Deeley's time.

Deeley's standard goods engine, which replaced the old Kirtleys scrapped or sent abroad, had 5ft. 3in. wheels, 18½in. by 26in. cylinders, 175lb. working pressure and 1,421 sq. ft. of heating surface (total). The weight in working order was 43 tons 16¼ cwt. Similar boilers were placed on some of the Johnson goods engines in the course of rebuilding. There was the standard Deeley tender, six-wheeled, and with a capacity of 3,500 gallons. Six old Kirtley goods engines, also, were equipped with large boilers, having 1,427 sq. ft. of heating surface and 175lb. pressure, an alteration which speaks well for the quality and good repair of the ancient frames. A stranger operation was carried out in 1906 on three standard goods engines, Nos. 2049 (3326 in 1907), 2056 (3333) and 2110 (3387), for these were rebuilt with 6ft. wheels, the largest ever placed under an 0–6–0 locomotive on a British railway.

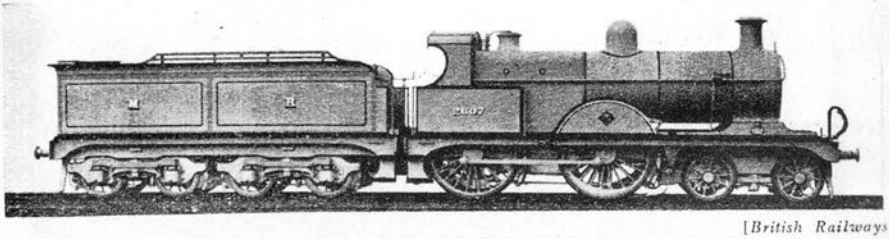
This must have been a guinea-pig operation to determine the value of relatively large six-coupled wheels for passenger service, for in the following year there appeared the well-known, though unfortunate, 0–6–4 passenger tank engines, Nos. 2000-39. The 6ft. wheel diameter was not repeated. The only British locomotives the author can recall which had leading wheels of 6ft. or over were

Stroudley's Devonshires and Gladstones on the London, Brighton and South Coast, Adams's Jubilees on the London and South Western, the extraordinary Crampton engine *Lablache*, mentioned earlier in our present story, and Bury's original *Liverpool*. The new Midland tank engines had 5ft. 7in. coupled wheels and 3ft. 1in. bogie wheels.

The boiler had a total heating surface of 1,347 sq. ft. and a working pressure of 175lb. The side tanks were carried forward to the front of the smokebox, and cut out between the leading and driving splashers to give some sort of accessibility (not much) to the motion. Tank capacity was 2,250 gallons, and a large bunker at the rear carried 3½ tons of coal. They had scoops for water pick-up. Weight in working order was 72 tons 8 cwt.

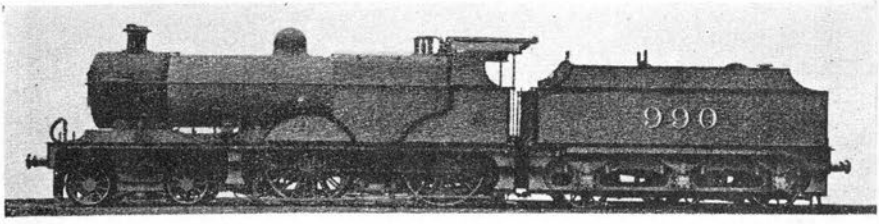
It must be admitted that the new tank engines were not the shouting success that they might have been. For their size they were even somewhat feeble; indeed, six which were sent to the London, Tilbury and Southend line when the Midland took it over in 1912 were returned with polite thanks, because they could do the work of neither the Tilbury 4–4–2 passenger tank engines, nor the 0–6–2 goods. Their later equipment with superheater boilers and Belpaire fireboxes failed to make really good engines of them. They did various sorts of work at various times, including the haulage of fast expresses over relatively short distances, but at speed they rolled badly. About 1920, one could usually be seen in Bedford yard, simmering gently, and doing nothing except wait for a better engine to break down somewhere between Kettering and Luton and give her a break. After formation of the London Midland and Scottish Railway, there were several bad derailments for which this design was blamed. They were all broken up between 1935 and 1937.

A much more successful story was that of Deeley's rebuilding of the Johnson 4–4–0 express engines, all of which, except the very oldest, were thus dealt with by him or his successor. At first it was genuine rebuilding, and involved the mounting of much larger Deeley boilers on the old frames. Engines thus treated included Nos. 14, 61-64, 2187-90 and 2195. In 1909, however, much more drastic things began, with No. 386 (old No. 1816, originally built in 1888) which had new frames, new boiler, new cylinders, new motion—in fact, practically everything new except the number, which was almost new in any case. The coupled wheelbase was increased, and the new Deeley boiler had 1,410 sq. ft. of heating surface, of which the Belpaire firebox provided 127 sq. ft. The grate area was 21 sq. ft. and pressure was 175lb. Enlargement of fireboxes, with a higher proportion of heating surface to that pro-



[British Railways

Large Johnson express engine No. 2607, with Belpaire firebox and bogie tender; built in 1900.



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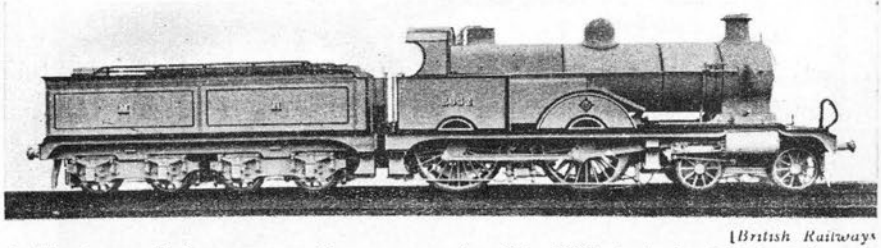
Class 4 express engine No. 990, built for the Settle and Carlisle line by R. M. Deeley, 1909.



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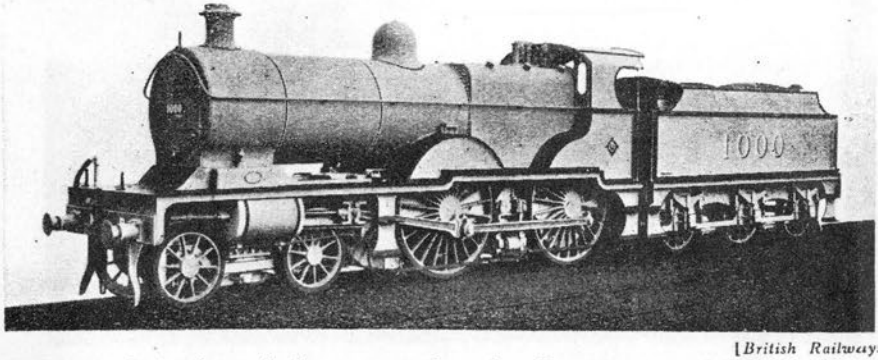
Smith three-cylinder compound express engine No. 2632, built by S. W. Johnson; later renumbered 1001.



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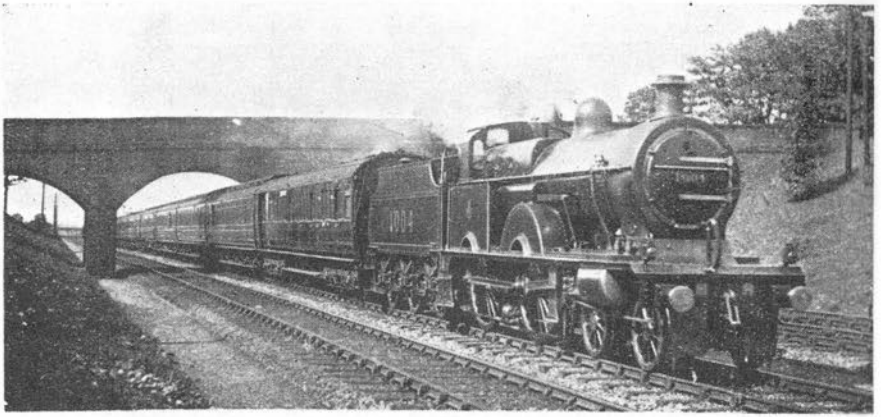
R. M. Deeley's three-cylinder compound engine No. 1000, as originally built in 1905; later renumbered 1005.



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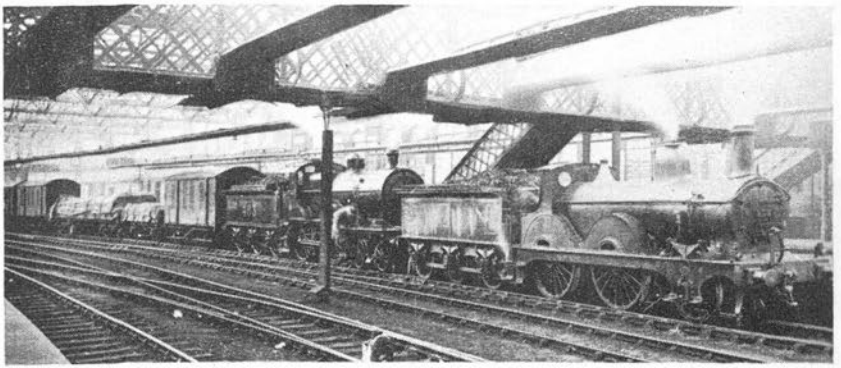
Up Bradford express near Mill Hill, headed by S. W. Johnson's three-cylinder Smith compound engine No. 1004 (originally No. 2635); through Lancashire & Yorkshire coach next to engine.



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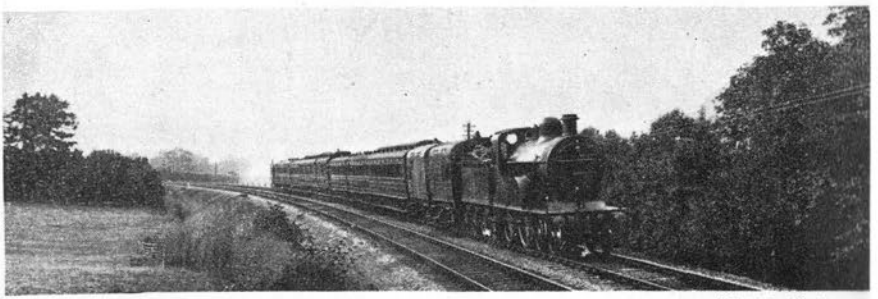
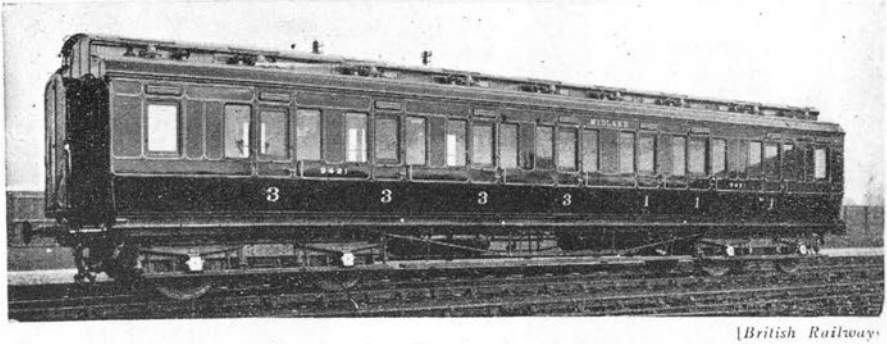
Up Scotch theatrical special at Carlisle; Johnson 2-4-0 engine piloting Class "2" 4-4-0.



[*British Railways*

Train near Cotehill; Class "2" 4-4-0 engine No. 367, hauling a mixture of Bain and Clayton coaching stock, with horseboxes leading.



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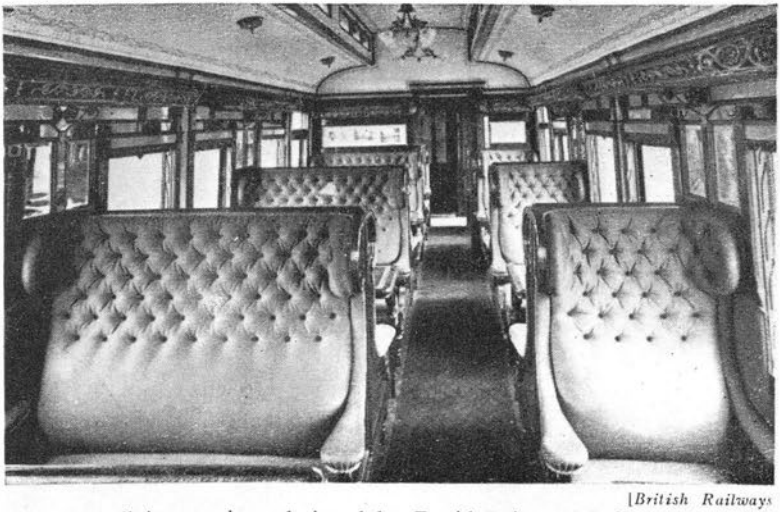
Clerestory composite corridor coach, with Pintsch gas light; designed by David Bain and built at Derby in 1907; wooden body on steel frames.



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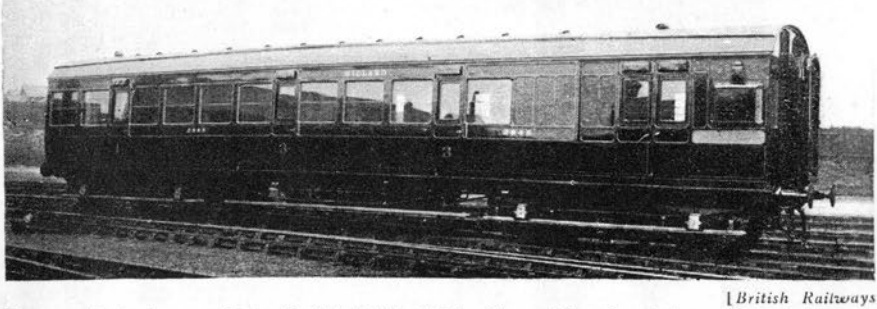
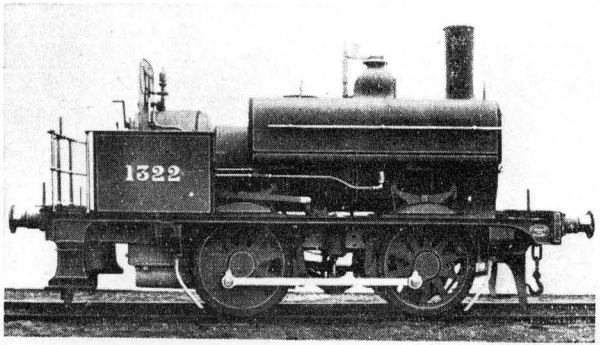
First-class dining carriage designed by David Bain and built at Derby in 1904, with clipper body and clerestory roof.



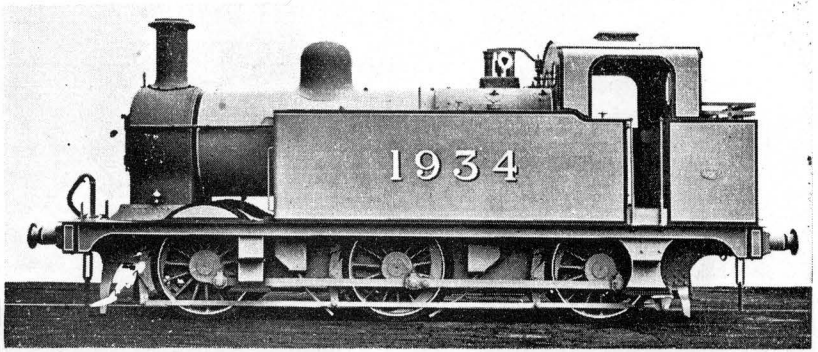
[British Railways

Composite brake coach by R. W. Reid, 1917. Except for the plain roof, it followed Bain's later practice in all main features.



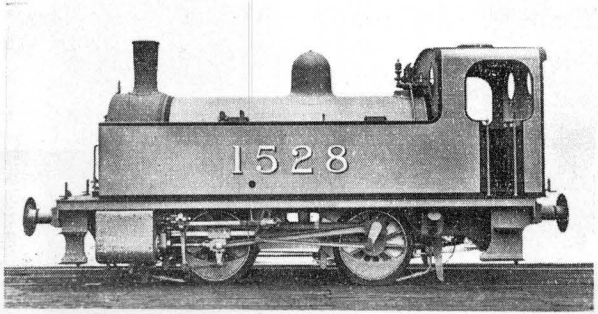
[*British Railways*

Saddle-tank shunting engine No. 1322, built by S. W. Johnson in 1883; renumbered 1322A in 1892, 1500 in 1907, and withdrawn in 1926.



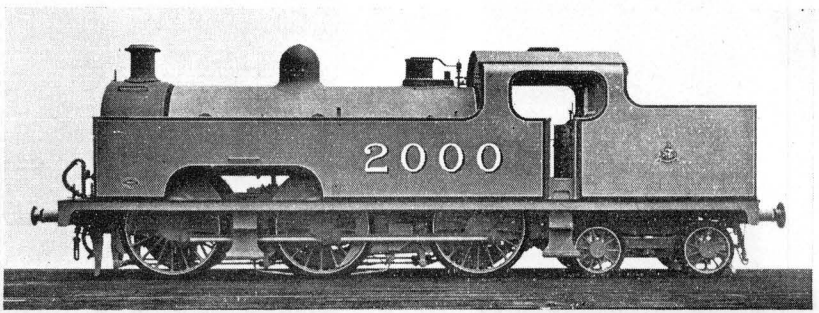
[*British Railways*

Standard goods tank engine No. 1934, as running in Sir Henry Fowler's time. First of the series appeared in 1899; in the form shown, it was perpetuated for some years by the London Midland & Scottish Railway.



[*British Railways*

Deeley's shunting tank engine No. 1528, built at Derby in 1907 for use on works and colliery lines.



[*British Railways*

Deeley's 0-6-4 passenger tank engine No. 2000, built in 1907; the first of a rather unfortunate series of 40 engines, all of which were scrapped by the L.M.S.R.

vided by the tubes, increased boiler power more in practice than on paper. Thereafter this "rebuilding" policy became general, and in later cases superheaters were incorporated. The last saturated engine of this class to remain in service was British Railways No. 40383.

A prominent feature of the Deeley express engines, and of the supposed rebuilds just mentioned, was the provision of large flat shields, set transversely on the fronts of the leading bogies. These were a consequence of the widespread double heading, and of the newly-introduced water-troughs. (Tamworth, on the Birmingham and Derby line, acquired them, as well as the places already mentioned.) The shields were to protect the bogie bearings of the second engine on a double-headed train from getting too overwhelming a bath when passing over the troughs. They gave an engine a somewhat grotesque appearance when viewed from the front, strongly resembling that of a Victorian lady showing her trouserines while crossing a wet patch in the street, though their object was rather the utilitarian one of gaiters, than anything decorative or skittish.

It was in Deeley's time that the Midland system of power classification came into use, as part of the traffic control system to which more reference will be made in a succeeding chapter. At first it was only for goods engines, rising from class 1 to class 3, according to size and nominal capacity. Later it was extended to passenger engines, the compounds and nine-ninety-nines being in class 4, the Johson Belpaire engines in class 3, the "rebuilt" 4–4–0 engines in class 2, and the 2–4–0, 4–2–2 and oldest 4–4–0 in class 1. The system originated that in use on British Railways today, having been perpetuated in the meantime by the L.M.S.

Another interesting development of the early twentieth century took place in Lancashire, where in 1908 the Lancaster to Morecambe and Heysham lines were electrified on the single-phase system (6,600 volts, 25 cycles) with overhead contact. It anticipated by a year the similar conversion of the London, Brighton and South Coast Railway's South London line. The Midland electrification was in the nature of an experiment, and only local passenger traffic was handled with electric traction. Electrified route amounted to 9·5 miles, with about 21 miles of all track. Three motor cars were built, one with Westinghouse electro-pneumatic control, and the others with electrical control. The Westinghouse car had a pantograph current collector, of the type which was later to become general throughout the world on electric main-line railways. The other two motor cars had each a pair of bow collectors, one for each direction of running. Electric working began between More-

cambe and Heysham, for purely experimental purposes, in the spring of 1908, but in the summer a full service was put on, Morecambe to Heysham, Heysham to Lancaster (Green Ayre), all on double track, and on the single-track branch from Green Ayre to Lancaster Castle. Normally, two motor coaches provided traction, each in multiple unit with a pair of control trailers, making seven new electric vehicles in all. They were designed by David Bain, and resembled the bodies of the steam cars which had preceded them between Morecambe and Heysham. Though externally handsome, they were bleak vehicles inside, with perforated plywood seats.

The Westinghouse car was slightly lighter than the other, "B type," motor car, 37½ tons compared with 40½. Shortly after they were in service, somebody became nervous about what might happen if the overhead contact lines fell down on the roof. The motor cars then had their roofs covered with earthed wire-netting, giving them about as grotesque an appearance as any electric train ever exhibited in these islands. Motor cars were 60ft. long and trailers 43ft., with an overall width of 9ft. The bodies were of clipper-section, with flat doors at the ends only. Some old compartment-type coaches served as spare trailers. All the equipment of this line was carried out by Mr. Deeley, who was an electrical engineer of distinction in addition to his other parts. He was assisted by J. Dalziel, who had been made electrical assistant under him.

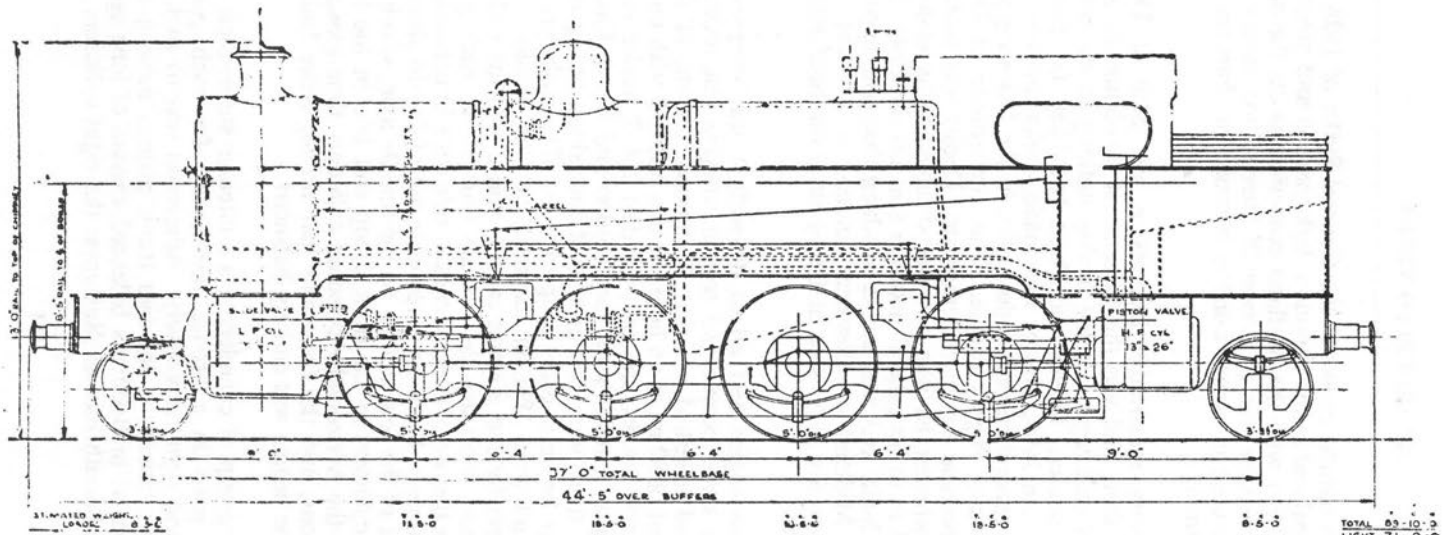
No other electrification was ever carried out by the Midland Railway. Visions of large electric locomotives purring up to Peak Forest with giant coal trains, or growling up and down the Lickey, faded with forgotten dreams, and the Heysham group of lines remained as it was, a strangely isolated electric railway, for the next forty years, until the equipment was worn out and the line was ready for fresh experiments under the auspices of British Railways. The only other electric line owned by the company, apart from a section of the London, Tilbury and Southend, was the Burton and Ashby Light Railway, a rural tramway worked by ordinary open-top double-deck cars of the type once so common in British provincial towns from Aberdeen to Redruth. It was a quaint little line, switchbacking across the fields, though some of its more urban environs were rather repellent. Something very like it occurs in one of D. H. Lawrence's short stories, with the more evangelical passengers bawling Moody and Sankey hymns downstairs, while their less serious friends on the top deck try to roar them down with improper ballads. It is a jolly little story, more cheerful than some of Lawrence's Midland tales, and has a really delightful end with an inspector being beaten up by infuriated conductresses. The

line died through natural causes in the General Strike of 1926. Its cars used to be painted in the common dark maroon and cream of many tramways, but with the Midland coat-of-arms on the sides. The Midland company was a pioneer of inter-station motor bus services, which were run across London between St. Pancras and the southern termini.

A solitary, very remarkable locomotive was built at Derby during Deeley's time, and was the outcome of revolutionary ideas on the part of Cecil Paget, Deeley having nothing to do with it apart from the tender. Deeley and Paget had been far from a success together. In 1907, Fowler was made works manager and Paget promoted general superintendent. So, in the following year, Deeley had to build Paget's engine. The atmosphere of Derby Works did not become any more temperate. Deeley was probably asking himself whether he was now responsible to his ex-works manager as well as to his general manager and his directors. Still, the engine was built, and was unlike anything that had appeared before, on the Midland or elsewhere; indeed, it was the most unorthodox locomotive to be seen at Derby since the brief meteor-flight of *Lablache*.

For years the engine and all to do with it was wrapped in mystery, though some people had seen it working test trains on the Midland, and it leaked out that it attained, on one of those rare runs, a speed of 82 miles an hour. It was a 2–6–2 with outside frames and outside cranks, the only English 2–6–2 tender engine until the coming of Gresley's on the London and North Eastern. Between frames there were two groups of four single-acting cylinders, one group between each coupled axle. The cylinders had trunk pistons and were 18in. in diameter by 12in. stroke. Each group of cylinders formed a single casting, and it was the width of these which made necessary the outside frames. In each group of four cylinders the two cylinders on each side were in communication with one another, but their bores were out of line to allow for the arrangement of the four cranks on the middle axle, which was driven by two cylinders in the front group and two in the back. The pistons of the horizontally opposed cylinders thus moved in contrary directions, and the front and rear driving axles had two cranks only. The engine was entirely balanced.

Above each group of cylinders was a circular steam-chest with two admission ports in a bronze sleeve, one for each pair of cylinders, left and right respectively. Admission was to each pair of cylinders simultaneously, the two trunk pistons moving away from one another as in Bodmer's balanced engines of long ago on the Brighton and South Eastern Railways; the eight cylinders were



TUBES, 1305·5 SQ. FT.
FIREBOX, 152·8 SQ. FT.
TOTAL, 1,458·3 SQ. FT.

GRATE AREA 28·4 SQ. FT.
WATER 2000 GALS.
COAL 3½ TONS.

PROPOSED 2-4-4-2 COMPOUND TANK ENGINE

MIDLAND RAILWAY
LOCOMOTIVE DEPT.
DEAR, 1906

in fact equivalent to four double-acting cylinders. In each steam-chest was a continuously rotating cast-iron sleeve valve, admitting steam to one pair of cylinders or the other as its single port passed over the ports in the bronze sleeve. An extension of the side rods at the rear drove what looked like a transverse " dummy " axle. This had bevel gears driving an intermediate shaft, which was in turn geared to a longitudinally-rotating shaft which operated the sleeve valves on both cylinder groups. Thus the locomotive had the outward appearance of an engine with jackshaft drive, though this was not so. Exhaust took place as in a uniflow engine, when the pistons overshot the exhaust ports in the cylinder walls. Reversing was by a differential gear of four bevel wheels in one of the shafts.

The Paget boiler had a very wide grate, extending over the main frames, and served by two firedoors, side by side. The firebox at back and sides was lined with firebrick instead of having water spaces, thus far anticipating the firebox of Bulleid's Leader class for the Southern Railway. There was a dome on the second ring, and two pairs of safety-valves over the firebox casing. Pressure was 180lb. per sq. in.

Leading dimensions of the Paget engine were as follow: 5ft. 4in. driving wheels, equally spaced on a coupled wheelbase of 17ft. 4in. With the leading and trailing trucks, which had 3ft. 3½in. diameter wheels and outside frames and bearings, the total wheelbase was 31ft. 4in. Weight of engine in working order was 74½ tons, of which 9½ tons rested on the leading truck, 18 tons 14 cwt. on the leading driving wheels, 18 tons 8 cwt. on the middle driving wheels, 18 tons 12 cwt. on the after driving wheels, and 9 tons 6 cwt. on the trailing truck. On its trials, a defect of the design became apparent in the differential expansion of the sleeve valves and liners, which broke in consequence. But the engine was a very bold departure in locomotive design and deserved more extended experiment than it got. Deeley undoubtedly hated the sight of it, and though it was given the running number 2209, it was never in any sort of regular service. Instead, feelings at Derby became intolerably torrid, and meetings between locomotive superintendent and general superintendent were as dynamite. It must be recorded that Paget, and not the Midland shareholders, paid for the engine.

The author had wondered, now and then, whether Deeley might not have produced some sort of " Opposition-Extraordinary " to the Paget locomotive, for Deeley himself was a scientist and something of a mechanical adventurer. Yet it was in the course of inquiries about the supposed Deeley Atlantic that the other ghost engine appeared, in the form of a diagram which was very kindly

lent by Mr. J. F. Harrison, mechanical and electrical engineer, Derby, British Railways.

The engine, which bears characteristic marks of Deeley's practice, was to have been a 2–4–4–2 compound tank with four cylinders, high pressure in rear, under the bunker, and low pressure in front, below the smokebox. All the cylinders were to be outside. It was not to be an articulated engine, and the eight driving and coupled wheels were equally spaced at 6ft. 4in. centres in a total wheelbase of 37ft., with Bissell trucks at both ends. Coupled wheels were to be of 5ft. diameter and truck wheels 3ft. 3½in. The high-pressure cylinders were to be 13in. by 26in., with 8¾in. diameter piston valves. Low-pressure cylinders would have been 20in. by 26in. with slide valves.

Its boiler was not to be superheated. The drawing shows outside steampipes from a "U" connection to the dome, as in contemporary French compound engines. Heating surface was to be 1,458 sq. ft. (tubes 1,305·5 sq. ft., firebox 152·8 sq. ft.); grate area, 28·4 sq. ft.; working pressure, 220lb. The tank capacity was 2,000 gallons, mostly in a pair of side tanks, arched to clear the motion (Walschaerts), and extending to the front line of the smokebox, though there was a bunker tank also. The bunker was for 3½ tons of coal. Weight in working order was to have been 89 tons 10 cwt. One wonders what sort of work Deeley intended for his compound tank engine. The 5ft. wheels suggest main-line goods; the long, rigid wheelbase and Bissell trucks would have scarcely suited high-speed work. Alas, the engine was never built, and the dynamite exploded!

One morning, Deeley came into the works white with anger, followed by a workman carrying a carpet-bag of common hand tools. He directed his workman to take the doorplate off his office door. The workman did so, and put the tools and the doorplate into the carpet-bag. Deeley turned on his heel and stalked out of the works, never to return. He devoted the rest of his long life to science, and had nothing more to do with railways and locomotives.

So, in 1909, Henry Fowler succeeded as chief mechanical engineer of the Midland Railway. The Lord-in-Waiting had not waited in vain. As for the Paget locomotive, it stood for years in the Derby paint-shop, a sort of Glamis Horror of which everybody was aware, but which nobody mentioned. Visitors were hurried past its grim, shrouded shape. But much brilliant thought had gone into its design, and looking back over many years one cannot feel any-

* Mr. E. M. Deeley emphatically asserts that his uncle's quarrel was "nearer the top" than with Cecil Paget.

thing but sorrow at the offence which clouded its advent, and sympathy for both the men involved.

One can turn in some relief to the carriage and wagon department, an harmonious establishment compared with the locomotive works at that time. In 1902, as remarked, David Bain from the North Eastern had succeeded old Tom Clayton. There was much difference in their respective successions. Clayton had come when the Midland Railway was served by an enormous collection of most antique rolling stock, and had been immediately faced with its replacement along the grandiose lines put forward by James Allport. He had carried out that great reformation on the scale it deserved, and when he retired the Midland was a model line in respect of all its coaching stock. The only archaisms were in the persistence of Pullman-type sleeping cars, and the relative scarcity of vestibuled corridor trains on long-distance services.

But Bain came from what was also an excellent railway for carriages. Even then, a very high proportion of the North Eastern coaching stock was on bogies. There was another point of resemblance; the contemporary North Eastern carriages were mostly of the clerestory type, and all were lit by gas, even the heavy dining and sleeping cars which Bain had designed for the East Coast Joint Stock. New sleepers and dining carriages were Bain's first important contributions to the Midland Railway's equipment, and these followed very closely the style finally standard under Clayton, the same deeply-curved roof with a clerestory, the same rectangular panelling and windows with top-lights.

All carriages were very magnificently furnished and decorated: even the upholstery was richer in colour and pattern than that of other railways. True, one remembers a red-and-black third-class terry in which the letters M.R. repeated themselves with fearful persistence—one started counting them sometimes, on long journeys by gaslight. But one also remembers the gold and purple arabesques of other third-class carriages, and a grass-green velvet in some of the first-class. One recalls rich walnut and mahogany, and grandly patterned ceilings. How different a thing was a Midland train from one on, say, the Lancashire and Yorkshire, with its grim horsehair seats in the third-class and its pompous frightfulness in the first!

Mr. Bain henceforth used electric lighting for all the dining and sleeping cars, but only for some of the coaches. The gas lamps in the lower decks were dimmed at night by heavy green baize caps which could be snapped over the globes. These things were applied to the carriages on a strictly routine plan, which meant that all

sorts of main-line vehicles got them, even picnic saloons. For younger readers be it explained that a picnic saloon was a railway carriage arranged like a giant tramcar, of such refined discomfort that no sober person could be expected to sleep in it. Gas was cheap and liberally provided by the company's own gasworks, whereas dynamos added to the resistance of trains which the Midland was always anxious to keep light and within the power of small and often old engines. Nothing had occurred to make gas seem an undesirable thing—yet.

The new Midland diners of 1903 were of clipper or tumblehome contours, with recessed vestibule doors and corridor connections. The company maintained its old custom of booking passengers to ride all the way in the dining carriage, although they could now move up and down the train at will. In practice, there seemed to be an unofficial arrangement in regard to people from another part of the train who came demanding to be fed. It was, in my experience, to induce two or three of the older inhabitants—those whom the head steward had decided were most amiable and docile—to give up their own pre-booked seats for a little while. This was in the third class; we were bowed with soothing words into a first-class compartment, which we seemed to occupy from about Leeds to Settle. Then the steward would reappear, saying that everyone was satisfied and we could come back now. What happened with first-class passengers, especially if they were irascible, goodness knows! I repeat that this is from personal recollection, and I have never seen official or semi-official reference to this migratory business.

Bain's standard sleeping carriage was of clipper shape, with clerestory, and externally much like the diners. Both were on six-wheel bogies, as were those designed by Clayton before them. A sleeper was 65ft. long by 9ft. wide over body mouldings and 12ft. 8in. high from rail level to camber of clerestory. The tare was 37 tons, and there were nine single-berth compartments, one double-berth and one smoker. Gas was carried for heating light refreshments.

In addition to these were some remarkable family sleeping carriages, unlike anything on other railways. The arrangement was not new to the Midland, for in the 'eighties Clayton had built some six-wheel family saloons with sleeping berths, rather like the earliest sleeping saloons on the London and North Western, but Bain's version was on a much grander scale. In fact, when arranged for daytime travel, it looked more like a diner by far than the old ideal of a family saloon, for the main compartment had an off-central gangway with single sections on one side and double on the other.

At night the sections made up like those of Pullman sleepers (without the upper berths); the elbows on the gangway sides folded up, and the travelling family disposed itself with decorous familiarity in the double and single beds on either side, respectively, of its travelling dormitory. It was a much more comfortable arrangement than that of the old but widely-used family saloon with its stiff sofas along the sides, and a series of these carriages was built during Bain's term of office. They had electric lighting, like the ordinary dining and sleeping carriages.

But the family saloon, having reached its criterion in such vehicles as these, and in the sumptuous and very expensive " semi-royals " of the London and North Western Railway, were about to be faced with a law of diminishing user. The size of British families was dwindling; the motor car had arrived, though the motor industry had not yet reached its present exalted status, for the maintenance of which (and the Pools) the British public apparently has its sole reason for continued existence.

In 1912, Mr. Bain built a very handsome royal saloon, 59ft. 9in. long by 8ft. 9in. wide. Structurally, it was typical of his more elaborate clerestory carriages, such as the diners and sleepers, and Waring and Gillows were given the job of decorating and furnishing it. The main compartment was 18ft. long, and at each end was a smaller compartment, one a smoking-room and the other a " boudoir." (Do people still have boudoirs nowadays, and do ladies have special headgear for their use?) Upholstery was in green silk in the exuberant richness of Edwardian taste and fashion, and the smoker had green leather chairs, set amongst the dark red mahogany which was considered suitable for meditative ease—dining-rooms, studies, even bathrooms in those days—mahogany and always mahogany! It is a grand wood, and would return to its own if there were enough to go round in an enlightened democratic community.

The Midland Railway did not maintain a permanent royal train, like the North Western, Brighton, Great Western and South Eastern, over all of which frequent state journeys were made. But it could improvise a very creditable substitute. The standard royal make-up was as follows: Brake-first, royal saloon, dining carriage, saloon, corridor first, brake van. The last royal journey of which I have note, whereon the Midland Royal was employed, was on the occasion of the marriage of the Duke and Duchess of Gloucester. In L.M.S. days it carried other distinguished personages—a Papal Nuncio going to Ireland, Mr. de Valera visiting London for discussion, and others. The L.M.S. altered its furnishings and installed Thermotank forced ventilation, with the ducts running

along the sides of the clerestory. I remember liking the new style at the time, though now it seems repulsive.

Mr. Bain built also some very fine invalid saloons, to be hired at a price by wealthy valetudinarians. These, too, are rarely used nowadays when the motor ambulance generally provides a more convenient conveyance for the sick. Apart from increased use of side corridors, Bain's ordinary coaches followed Clayton's later designs very closely. The rectangular panels and windows with top-lights were, however, soon discarded, and a return was made to the rounded corners, which were less liable to absorb moisture and cause rotting. The handsome clerestory persisted in all main-line stock, almost to the end of the Midland's existence as a separate railway. Some elliptical-roofed carriages were built by R. W. Reid from about 1917 onwards, and plain roofs were used for the suburban carriages, but to the end we regarded the Midland as a clerestory line.

Wagon design generally followed the paltry and unimaginative lines favoured by other British railways, though the goods brakes were distinctive of their type. The goods stock was painted light lead grey, lettered M.R. in white. The Midland company was the first to paint its initials large on the wagons, facilitating the work of Railway Clearing House officials. The practice coincided with a drive to reduce the number of private owner's wagons through their replacement by common-user wagons belonging to the railway company. In 1902, the Leeds Forge Company built for the Midland a series of bogie 30-ton coal wagons (13 tons 2 cwt. tare).

Midland coaching practice, for all its excellence on the scores of comfort and elegant design, came in for criticism—or at least implied criticism—as a result of two very bad accidents on the Settle and Carlisle line. Both, unluckily, were in various ways discreditable to the company, unlike the smash at Wellingborough, which was rather a cruel misfortune. They were preceded by two other very destructive accidents.

That at Cudworth, early in the morning of January 19, 1905, might have been taken as a warning of shocking recurrences; also, it might have been very much more dreadful than it was, though the thing was bad enough in all conscience. An up mail and van train, with two passenger carriages, the 2.35 a.m. out of Leeds, was overtaken by the up Scotchman, double-headed, with nine eight-wheel coaches, a twelve-wheel sleeper, and two six-wheel vans. The express train engine was one of the big 4–4–0s with the original very heavy bogie tender. This massive train hurled itself on to the tail of the van train, destroying the last three vehicles, scattering others,

and itself becoming almost completely derailed. The leading express engine overturned about 300 yards ahead of the point where it struck. The morning was dark, with belts of dense fog, but no fogmen were out. Five passengers, a fireman, and the guard on the express were killed.

A witness of the collision, Goods Guard Woods, knowing that the down Scotchman was signalled and probably in the same section, rushed up the line with his box of detonators, and just had time to get one of them on the rail. This was exploded by the down express, the driver of which made a full emergency brake application. His engine struck a derailed fish van, but by then it was going dead slow and further disaster was averted. These men and others were highly commended at the ensuing inquiry.

Then fire broke out in the fifth or sixth carriage of the up express, though these were electrically lighted, and the only adjacent gas was that supplying the rings in the sleeping car. It spread rapidly and consumed most of the jumbled line of vehicles behind the derailed express engines. Major (afterwards Colonel Sir John) Pringle, Inspecting Officer of Railways, reported that there was no evidence as to its origin. He placed primary responsibility on Driver Mugg of the leading express engine, while attaching some blame to Driver Buggins on the second engine. The former had been relying on his fireman for sighting signals on this section, and they had been travelling at about 50 m.p.h. through the thick fog at the time of impact, having run through eight distant signals at caution and five stop signals at danger. Buggins stated that he was unable to see any signals owing to fog and smoke beating down from the two engines. All the men concerned told their stories simply and there was no conflicting evidence.

There was another collision in fog at Tapton Junction on September 11, 1906, with one fatality. On February 4, 1909, there occurred a terrific head-on collision at Sharnbrook, between two goods trains, but on the passenger roads just south of the station. A northbound ordinary goods train, with Johnson 0—6—0 locomotive No. 3698, was on the up main line, and supposed to be crossing to the down goods. The facing points of the double crossover (facing, that is, to the goods train) were not correctly set for the movement, and the driver of this train found himself moving into Sharnbrook station on the wrong road. Further, to his utter horror, he saw the signals off for an up train on the same road. (With the points correctly set for this movement the up home signals could not have been pulled off.) He hurriedly reversed and began to set back, but it was too late to avert collision. Round the curve through the station came an up perishable goods and van

train, running at express speed, headed by the large 4–4–0 engine No. 388. The engines struck just south of the crossover. The men on No. 3698 jumped at the last moment, but those on the express engine were killed. The last seventeen wagons of the down train broke away and ran back with their goods brake, along the up fast line nearly to Oakley. The remaining vehicles were piled up into an enormous heap of rubbish, with the two engines in the middle, and the up and down main lines were blocked for several days. Sharnbrook station had to be closed, and all traffic dealt with on the goods roads. Both locomotives were practically destroyed; No. 388, which had just come out of shops, officially rebuilt, but really a new engine, had the smokebox, cylinders and leading bogie smashed to pieces; the main frames were broken off at the driving wheels and the motion was completely destroyed back to the eccentrics and big-ends.* It was a very ample accident.

Less than two years later, there occurred the worst accident yet. Early in the morning of Christmas Eve, 1910, there was a congestion of engines in the locomotive yard at Garsdale, then called Hawes Junction. Seven were waiting to be turned on the famous stockaded turntable. Two engines, 4–4–0 Nos. 448 and 548, were got out on to the down through road, facing towards Carlisle. There the signalman forgot all about them, as he frankly admitted afterwards, and accepted and offered forward the midnight express from St. Pancras to Glasgow. This consisted, in order, of the old Kirtley 2–4–0 engine No. 48 (ex-815) piloting 4–4–0 No. 549, a brake-third, an ordinary third class, two sleeping carriages, a composite coach, another third, and two vans. All the vehicles were of Bain's or Clayton's clerestory type, and all, except the twelve-wheel sleepers, gas-lit eight-wheelers.

It was a pitch-dark morning, and pouring with rain. The drivers of the two light engines, which were to go forward to Carlisle, saw the advanced starting signal go to green for the express, and took it for their own signal, which was to be expected, though one or other should, previously, have sent his fireman to the Hawes Junction box to carry out Rule 55, as they had been waiting for some time. They were out of sight when the express came through under clear signals. The light engines had passed through Moorcock Tunnel and were near Grisedale Crossing (a footbridge) when Driver Bath of engine No. 548 saw headlights in the tunnel behind him. Speed of the light engines was then about 25 m.p.h.; the express, double-headed, with its eight-carriage train weighing only 207 tons behind the tender, was coming up the bank at about 65

* The "rebuilding" process was repeated, so that in fact there were three Nos. 388

m.p.h., and Bath recognised it when it burst out of Moorcock Tunnel, throwing cinders high in the darkness. He opened his regulator wide and told his fireman to keep the whistle open.

On the express, Driver Oldcorn of the Kirtley engine saw the tail-lamp of No. 548 as he came out of the tunnel, but the collision took place in six seconds. The shock broke and flung aside the bogie of Bath's engine, which followed No. 448 on four wheels for 350 yards before both engines turned over outside Shotlock Hill Tunnel. Behind them, the two express engines went over against the side of the cutting. The steel frame of the second coach went under that of the leading brake third, and telescoping took place through three and five compartments respectively. All the lights went out in these coaches (Nos. 237 and 225) and in the leading sleeping carriage, and there was no spilling of live coals from the engines, but escaping gas from the gas cylinders was ignited by the showers of sparks from the derailed bogies and displaced brake gear, and the wrecked train was quickly alight in a strong head-wind. Two passengers, Eng.-Lieut. McGhie, R.N., and Mr. W. A. Agnew, carriage superintendent and later mechanical engineer of the District Railway, did their best to stop the flames; Lieut. McGhie succeeded in stopping one flaming gas-jet with his gloved hand. Engine No. 250 arrived, running light on the up road from Aisgill, and all the water in its tender was used in trying to stop the fire, but the blazing gas was too strong. A relief engine from Hawes Junction succeeded in drawing the two rear vans clear, but the rest of the train was consumed. The train was lightly loaded, but twelve passengers were killed in this lamentable accident.

Of the engines involved, Nos. 48 and 548 were worst damaged, the latter as described, while the former had the front of the frames broken and distorted. As she was very old, Mr. Fowler decided not to repair her. It was a tragic end for what had been a very good engine. A curiosity was the sequence of engine numbers—48, 448, 548 and 549.

Major Pringle conducted the Government inquiry into the accident. He placed responsibility on the signalman at Hawes Junction, which the grief-stricken man freely admitted, and also on the drivers of the wandering light engines, who between them had failed to carry out Rule 55 and remind the signalman of their presence on the down road. Apart from his share in this lapse, Driver Bath of engine No. 548 behaved very well and was commended. Although thrown amongst the coal and knocked senseless, he picked himself up as quickly as he could and walked forward to Aisgill box through the driving rain, returning to the scene as soon

as he had told the signalman there of what had happened. Major Pringle blamed the fire roundly on the Pintsch gas-lighting system, though Mr. Bain tried hard to talk down its dangers. The mounting of brass bars across windows was also criticised. Those bars and their virtues were not infrequently a subject for argument. Some years before, the barring of all windows had been recommended, following an accident on the South Eastern in which a seasick Continental passenger had struck his head against Shakespeare Cliff Tunnel at Dover. Long bars were needed as handrails in corridors. These were at first always of brass, but a later practice was to make them of wood, so that they could be easily broken in an emergency.

On September 2, 1913, there was another very bad accident near Aisgill, through different causes but with the same dreadful result. The Glasgow to St. Pancras sleeping car train, consisting of nine carriages weighing 243 tons and headed by engine No. 993, one of Deeley's two-cylinder simples, was due out of Carlisle at 1.35 a.m., followed at 1.49 a.m. by an up Edinburgh express of six carriages behind engine No. 446, one of the rebuilt Johnsons. Driver Nicholson of No. 993 had difficulty with steam, which he blamed on the small coal in his tender. He lost time steadily on the climb and finally lost his steam, coming to a stand half a mile north of Aisgill signal box—that is, on the wrong side of the summit. He had been helping his fireman between Ormside and Kirkby Stephen, but was ten minutes down when he passed Mallerstang box, the next north of Aisgill.

Nor was all well on the up Edinburgh train. Driver Caudell was also having trouble with small coal and poor steaming, and was apparently preoccupied with this when he should have been observing the Mallerstang signals. The Mallerstang signalman had his distant at caution and his home and starter at danger, but intended to let the train draw up to the box and stop it at the up starter. When it had passed the up distant, he pulled his home signal off. To his horror the train went straight through the block and continued up the hill, regardless of his frantic efforts to attract Caudell's attention.

Where the stalled Glasgow train stood, a few hundred yards short of the summit level, the fireman had started to walk to Aisgill box when he saw the Edinburgh train coming up from Mallerstang, steaming hard. No. 446 was being flogged up to the summit and volleys of red coals were shooting out of the chimney. No. 993 was still immovable, and at about 3.4 a.m. No. 446 struck the rear of the Glasgow train, passing right through the last vehicle and halfway into the next, the roof of which was set on fire by the

live coals from the chimney, while scattered piles of luggage were also ignited at a lower level. The last three vehicles of the Glasgow train were burnt out as they lay, partly piled over the engine. Fourteen passengers were killed on the spot, and two more died of their injuries. It was the worst accident in the history of the Midland Railway. While the direct cause of the fire in this case, and unlike that of the Hawes Junction collision, was the scattering of live coals inside a broken wooden coach, the gas cylinders made their dreadful response as the fire reached them. No coals were scattered from the ashpan, and the engine remained upright, making an eerie spectacle after the fire as it stood, fairly intact but scorched white all over. At the ensuing inquiry, again conducted by Major Pringle, Driver Nicholson said that 230 tons was too much for a " 999 " on the Big Drag in bad weather.

These two awful accidents made a lurid page in the later history of the company, nor were they the last in which the burning of gas-lit Midland carriages exacted a grim toll, though that at Charfield on the Birmingham and Gloucester line took place in 1928, some years after the formation of the London Midland and Scottish Railway. The Pintsch and similar systems of oil gas lighting were now very suspect, but their immediate abolition would have been a heavy task. One wonders a little, however, at the optimism of the Lancashire and Yorkshire Railway which, after the Aisgill smash on its neighbour line, brought out a " fireproof " train, lit by gas throughout. The Aisgill accident also caused an uncomfortable beam of publicity to be directed on the Midland company's small-engine policy, but Mr. Fowler was not stimulated into producing any large express engines. The 1905 Deeleys continued to be the nearest approach to such a thing anywhere on the Midland system, and a handsome compound 4–6–0 of Deeley's design was never built.

Chapter Nine

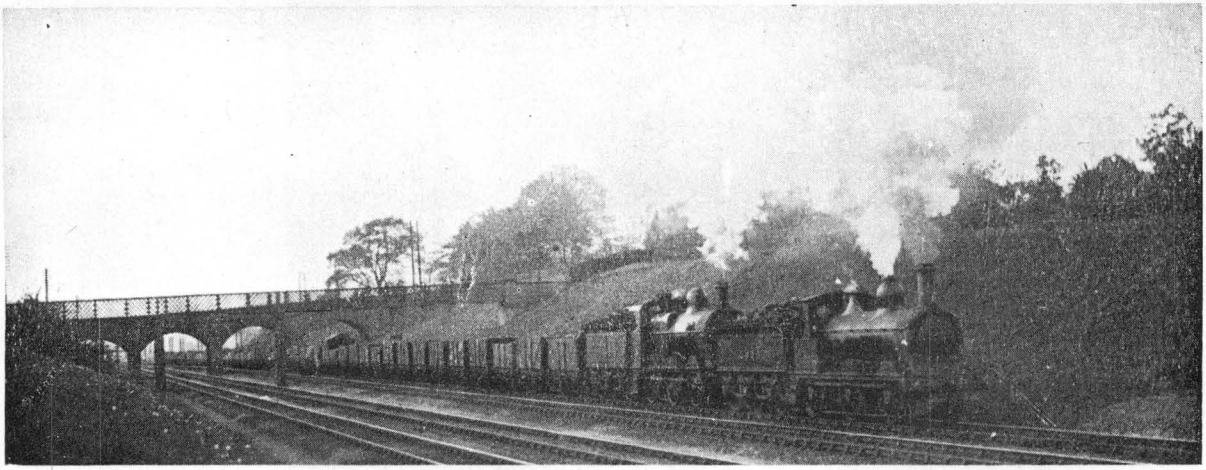
TRAFFICS AND CONTROLS

IN the 'nineties, the Midland had been somewhat under the lash of public opinion because its trains were not so fast as those of the rival " racing " lines, East and West Coast. Both the travelling public and the enthusiasts who studied such things for their own sake were inclined to grumble. *The Railway Engineer* growled out counter-criticisms, as it was always ready to do when the fraternity called, in those days, " railwayacs," presumed to make pronouncements in print on what did not concern them. The Midland company, the *R.E.* suggested in stately language, was an undertaking which considered its shareholders by handling an enormous coal traffic efficiently, rather than purveying catch-penny flights with passenger services like some people. (Queer comment, after Allport's activities in the 'seventies, abolition of second-class, and so forth!)

All the same, it had to be admitted that there was something a little vegetable about the Midland passenger services of the 'nineties. Now most people easily preferred express trains that loafed along *and kept time* at 45-50 m.p.h., to showy schedules combined with inefficiency in other quarters. But the Midland seemed just then also to have an easy-going regard for the virtue of punctuality. Certainly, time-keeping was not good. True, the Midland did not achieve the gay abandon of the London, Brighton and South Coast, but it was certainly erratic. So were the Somerset and Dorset and the London and South Western; at least there was some sort of harmony in the West Country Entente.

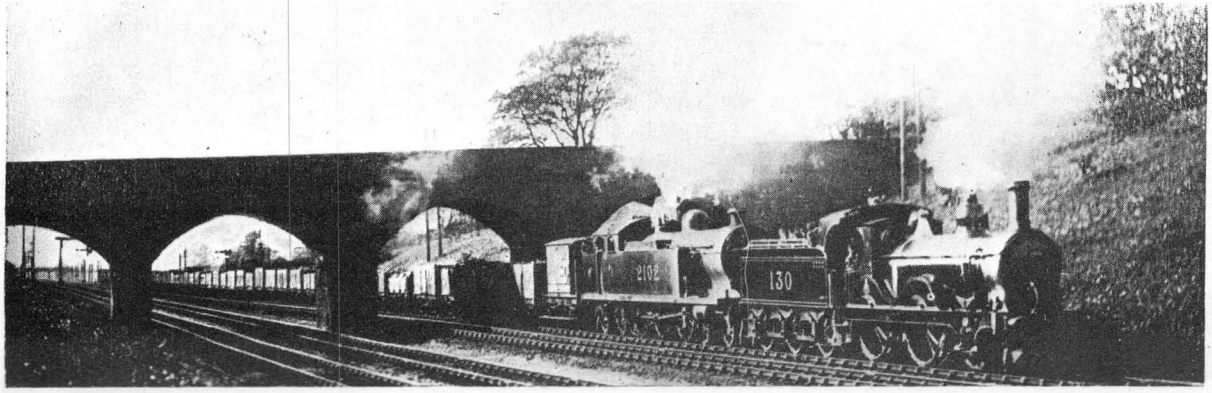
During the early nineteen-hundreds, there was considerable improvement in both service and punctuality with John Mathieson as general manager. Mr. (later Sir) Guy Granet became assistant general manager in 1905, and on Mathieson's retirement in 1906 (which he survived, poor man, but a few weeks), Granet became general manager, and continued the good work until his retirement in 1918. He became the last chairman of the Midland Railway, and the first of the London Midland and Scottish. As general manager he was succeeded by Frank Tatlow, who had been with the Midland Railway since joining the service as a boy under Sir James Allport, and who had been closely associated with him and his successors, John Noble, G. H. Turner, Mathieson and Granet. The best expresses between London and Nottingham were at one time known as the John Noble trains.

In 1904, under Mathieson, the Heysham harbour and branch



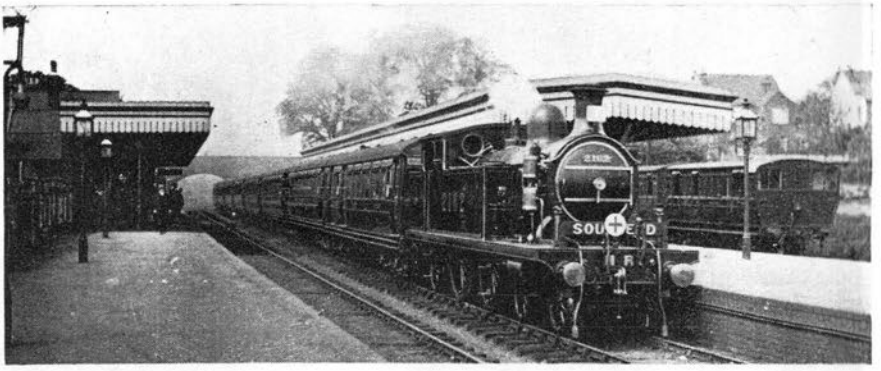
Right: Up coal train near Elstree, headed by small and enlarged Johnson 0-6-0 standard goods engines. This spectacle, between Toton and Brent, was one of the most characteristic of all train scenes on the Midland Railway.

[*H. Gordon Tidey*



Left: A quaint variation of the coal train panorama; in this the old 2-4-0 engine, No. 130, fitted with tender cab, is piloting No. 2102, one of the big Tilbury tank engines, from Wellingborough to Brent.

[*H. Gordon Tidey*

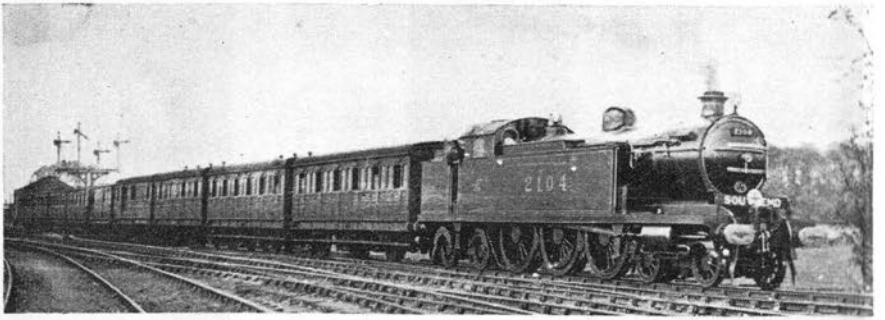


[*H. Gordon Tidey*

Ealing-Southend through train passing Upminster ex-London Tilbury and Southend 4-4-2 tank engine No. 2162 and special corridor coaches.

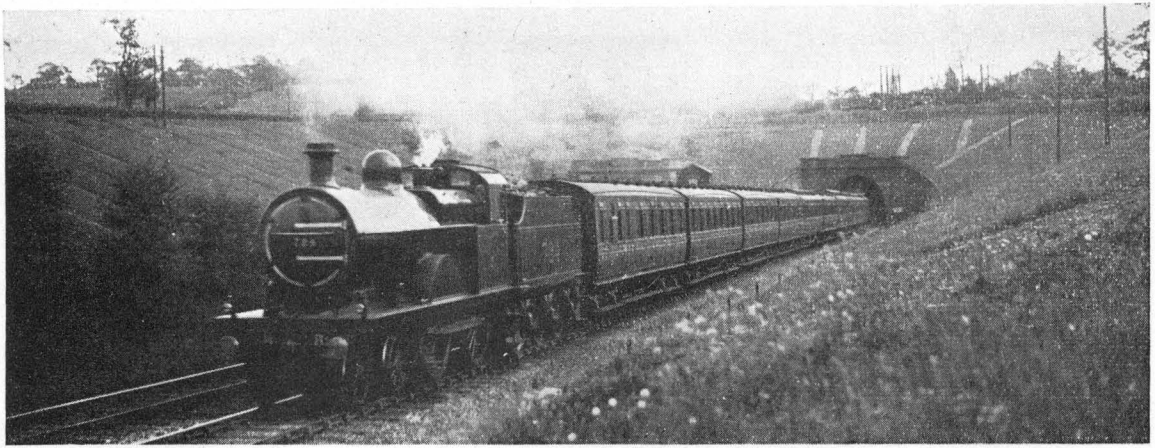
[*H. Gordon Tidey*

Business train of 13 coaches passing Hornchurch; ex-Tilbury large 4-4-2 tank engine and standard bogie stock.



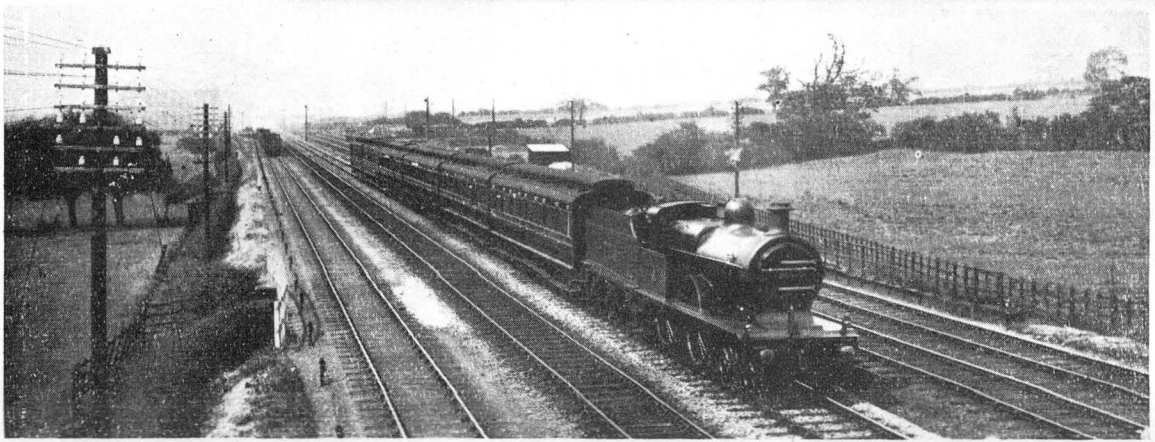
[*H. Gordon Tidey*

Local train leaving Upminster; Tilbury type 4-6-4 tank engine No. 2104, with six and four-wheeled coaches.



Right: Down South Midlands express leaving Elstree Tunnel behind class 3 4-4-0 engine No. 724. The train has been strengthened in front by one of Bain's standardsurburban sets.

[*British Railways*

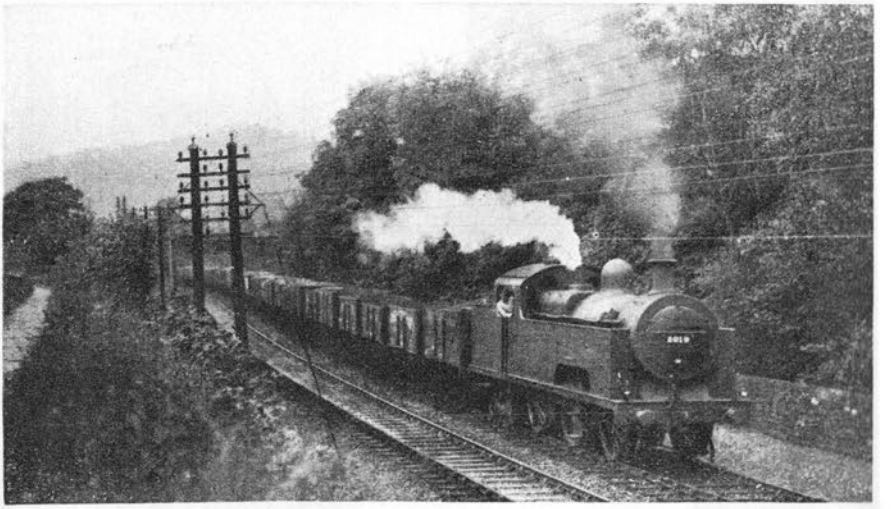


Left: Up express near Ilkeston Junction, headed by class 3 4-4-0 engine No. 709, about 1912. The coaches and diners are all of Bain's design.

[*H. Gordon Tidey*

H. Gordon Tidey

Down Scotch express near Hendon, about 1912, headed by Deeley compound engine No. 1032 with extended smokebox.



H. Gordon Tidey

Down coal train skirting the Cromford Canal (towpath on left) near Ambergate, headed by rebuilt 0-6-4 tank engine No. 2019.

were opened, and the Midland Railway entered the Irish and later the Manx steamer traffic. Previously, on July 1, 1903, the company had acquired by amalgamation an entire Irish Railway, the Belfast and Northern Counties, comprising a main line from Belfast to Derry and another short one from Belfast to Larne, and numerous branches, both broad and narrow gauge. Included in the effects were the Portstewart steam tramway, in connection with the Coleraine-Portrush branch, and the narrow-gauge Ballymena and Larne line, which provided a cut-off, avoiding Belfast, for traffic between Larne and Derry, though the break-of-gauge at Ballymena prevented through running. To the B.N.C.R. were added, by amalgamation after the Midland acquisition, the Limavady and Dungiven Railway (1907), and the Londonderry and Strabane (narrow gauge), which formed, physically, a part of the jointly-owned County Donegal Railways. The oldest portion of the Northern Counties system had been the Belfast and Ballymena Railway, incorporated in 1845 and opened on April 11, 1848. Mileage of the Belfast and Northern Counties, in 1922, came to just over 265 miles of route. The Midland system in England and Wales at that time came to 1,521 route miles, excluding joint and leased lines. All route in Great Britain and Ireland, including leased and share of jointly-owned lines, came to 2,170 route miles (4,103 track miles).

A managing committee was appointed for the Belfast and Northern Counties Railway. Three of the members were Midland Railway directors; the other four, including the chairman, were Irish. Throughout its Midland ownership, the Northern Counties maintained a sort of dominion status, and was worked quite independently except for co-ordination with the English services of the owning company. The locomotives, rolling stock and signalling equipment bore no resemblance to those of the Midland, though after the L.M.S. succeeded, marked Midland peculiarities, paradoxically, became apparent in the rebuilding of the Northern Counties Committee locomotives, which were then painted in a very creditable Midland red and continued so for long after the L.M.S. had gone over to black for all except the express engines.

Northern Counties signals recalled those of the Great Northern (of England), for they had somersault arms on brackets. The Midland signals at home were for long distinctive by having buff posts and a white spot instead of a bar on the red face (the South Eastern Railway did the same), while distant signals had a black horizontal stripe on the reverse side. Stop signals had a black spot. The Northern Counties engines were reminiscent, to Englishmen, of the North Eastern Railway in T. W. Worsdell's time, for they included a large number of Von Borries two-cylinder compounds. Bowman

Malcolm was engineer and locomotive engineer to the last. He was a remarkable man, apart from his fondness for von Borries compounds, for his appointment to charge of the locomotives dated back into the mists of the past, or so it seemed. He was 22 years old when he took office, and in it he spent almost his entire working life. The Northern Counties engines were chiefly 2–4–0, 4–4–0 and 0–6–0, and some of the last-mentioned rivalled those of the Midland in venerability, going back to the eighteen-fifties. Mr. Malcolm painted them " invisible green " lined out in yellow, blue and vermilion; as remarked, red engines came only with the L.M.S. The carriages were crimson lake. The railway's initials under Midland ownership were M.R., N.C.C.

For its Irish traffic the Midland Railway acquired the fleet of the Barrow Steam Navigation Company, and had three-times-weekly sailings between Barrow-in-Furness and Belfast. In 1910 the company had six steamers, including these, on the Irish and Isle of Man runs. The Heysham-Douglas I.O.M. service was confined to the summer months, and the crack ship of the fleet was the *Manxman*, a turbine steamer of 2,173 tons gross and a speed of 22 knots. There was one other turbine steamer at that time, the *Londonderry*, of 2,086 gross tons. The others at Heysham were the *Antrim* and the *Donegal*, and at Barrow the *Duchess of Devonshire* and the *City of Belfast*. The harbour and dock property at Heysham covered 350 acres, with 3,000ft. of quay and a minimum depth of 17ft. in the harbour at spring tide low water.

The Midland Railway was the pioneer of centralised train control, which began in a small experimental way at Masborough, near Sheffield, in 1907. It was originated by J. H. Follows, who in that year, from being traffic inspector, Derby District, was appointed to the staff of the new general superintendent, Cecil Paget. The Masborough office collected all information about the booking-on times of train staff, the lot of whom was very greatly improved. In 1907 there were more than twenty thousand cases of men working for excessively long hours. Four years later there were no such cases. So well did the Masborough telephonic control work that Mr. Paget proposed general central control of train movements, and on January 4, 1909, selecting the most congested section of the railway, brought all goods and mineral trains between Cudworth and Toton under the supervision of district controllers, in constant touch with one another, at Cudworth, Masborough, Staveley, Westhouses and Toton. It was as successful as the original Masborough staff control had been, and it was decided to extend the system to the entire network of the Midland Railway

The first end in view was the improvement of heavy coal workings. Much of the task was in the hands of Follows, who investi-

gated the workable capacity of the various sections and prepared large diagrams showing used and optional paths for the various classes of train. It was in connection with the new control system that the engines were classified by power and had their numbers painted in large figures on tender or tank side, easily identifiable without scrutiny. This, however, began in 1905. Amateurs were not pleased. At the same time, the handsome armorial bearings of the company were transferred on the cab side sheets. Booked timings were carefully studied and revised where necessary to give maximum utilisation of line capacity, and train diagrams were prepared. The entire Midland system was mapped in line diagrams, with superimposed enlargements of station layouts, showing cranes, single-line tablet or staff stations and water-troughs. Slow lines were shown in red and goods lines in green. The railway system was divided into 42 sections, covering over 1,500 miles of route. Separate working books were prepared for goods and passenger train movements, and, originally, various symbols were used to describe different classes of train. The use of path diagrams resulted in a remarkable improvement in the standard of punctuality throughout the railway. There had been improvement earlier in the century, but the punctuality of the Midland trains now became exemplary, a far call from the eccentric waywardness of the service provided in the 'nineties.

Central Control was placed at Derby, roughly in the middle of the system, being 129 miles from St. Pancras, 179 from Carlisle, and 141 from Bath. The control office occupied a large block adjacent to the office of the general superintendent, who had under his immediate supervision the superintendent of operation, the superintendent of motive power, the superintendent of passenger service and the general passenger agent. District controllers exercised decentralised supervision over all traffic in their respective areas, and these were always consulted by Central Control before any alterations of train movements were made in their district. The control amounted to giving the railway a highly sensitive nervous system, with the brain centre at Derby. Each day began with a telephone conference between the superintendent of operation and his district controllers, when special workings and any necessary cancellations were discussed, and any other exceptional circumstances affecting train movements.

Central Control, working through district controls, enabled the service to be continually watched by a relatively small staff, with a minimum of paper work. The movement of all fast passenger or perishable goods trains, and of important heavy goods, was governed by Central Control, and the system covered all distribution of rolling stock, locomotive working, and duties and times of

staff responsible for the running of the trains. When the scheme was complete, the district control offices were placed at Carlisle, Skipton, Leeds, Cudworth, Masborough, Staveley, Westhouses, Toton, Chaddesdon, Rowsley, Gowhole, Kirkby, Nottingham, Melton Mowbray, Leicester, Peterborough, Wellingborough, Luton, Kentish Town, Plaistow (L.T.S.), Burton, Coalville, Birmingham, Gloucester, Fishponds and Swansea. The system had its critics in advance. It was argued that centralised control could break down with more disastrously widespread results than were possible under old methods, but the degree of autonomy given to the district controllers guarded against this. There was, of course, the sort of argument always likely to arise between " loco." and " traffic," and the supervision of engine movements by the latter. One wonders whether this was not a catalyst which set off the final bang in the Deeley-Paget nonsense.

Maybe or maybe not. As we have seen, Deeley made himself rid of the whole outfit. Paget stayed, and so did centralised control, which became a prototype for the train control we know today. J. H. Follows, to whom the scheme owed so much of its inception and development, became superintendent of operation in 1914, and acting general superintendent, vice Paget, in 1917, being confirmed in appointment when Paget retired in 1919. In this office he continued under the London Midland and Scottish Railway.

Centralised traffic control became the monument of J. H. Follows. For a long time there was on the Midland and on the L.M.S. a lesser and rather quaint monument, the saloon carriage in which he made his travelling headquarters when out on the road, converted, as previously stated, from one of the Heysham rail motors. Follows was of rather an ascetic type, immaculate and perhaps a puritan. His saloon contained a grim white enamelled bath, served by a severely solitary cold tap. Nearly all the windows, right along the carriage, were of obscured glass. Whether this was to help him to concentrate, or to prevent lesser persons from being too awed by the daunting sight of the great man at work, has never been explained. Control not only made for smooth working and punctuality under normal conditions, it saved many difficult situations when things went wrong

A noteworthy Midland through service was that of the Travelling Post Office run jointly with the North Eastern between St. Pancras and Newcastle-upon-Tyne. A most useful service, for all the postal activities of West Coast and East Coast companies, it was a survival-direct of the days when *the* route to the North crossed over from west to east via the Midland and the York and North Midland Railways. Under pre-1914-18 schedules, the T.P.O

carriages left St. Pancras on the 8.40 p.m. down, and ran to Derby via Leicester, avoiding Trent via Sheet Stores Junction. Derby was reached at 12.10 a.m., and there the London mail was joined with the West of England T.P.O. which had left Bristol at 7.0 p.m. and arrived at 12.43 a.m. The combined train then went forward at 12.55 and travelled via Chesterfield and Sheffield to Normanton, where it arrived at 2.35 and was handed over to the North Eastern. Newcastle was reached at 5.28 a.m. The up train left Newcastle at 7.8 p.m., Derby at 12.55 a.m., simultaneously with the down mail, and reached St. Pancras at 4.20 a.m., having called, unlike the down train, at Trent Junction. In earlier days, four- and six-wheel travelling post offices and sorting carriages were used, of various Midland and North Eastern design; a six-wheeler built at Derby by Clayton in 1879 was 30ft. long by 8ft. wide, with the usual exchange apparatus, gas light, and clerestory roof. New Midland T.P.O. stock built in 1907 was of typical Bain design, 54ft. long and bulged for most of the length opposite the apparatus to give extra depth to the pigeon-holes. Width (normal) was still 8ft., increased to 8ft. 4½ins. at the bulge. Along the sides were the imposing initials M. & N.E. J.P.S. They survived amalgamation.

In 1909 the longest non-stop run on the Midland Railway was from St. Pancras to Chinley, 169½ miles. In summer, however, one of the Scotch expresses made its first stop, for locomotive purposes, at Shipley, 206 miles from St. Pancras. Specimen fastest runs between St. Pancras and the Midlands in the same year included: Derby, 128·5 miles in 145 minutes (53 m.p.h.); Nottingham, 123·5 miles in 132 minutes (56 m.p.h.); Leicester, 99 miles in 105 minutes (56·6 m.p.h.); and Bedford, 49¾ miles in 55 minutes (54·27 m.p.h.). In respect of Leeds and Bradford, the Great Northern Railway had the advantage of shorter distance, and had for long years made these the object of its crack service. The distance from London to Leeds was 196 miles by Midland and 185¾ miles by Great Northern. The fastest Midland expresses made the journey in 3 hrs. 40 mins., ten minutes longer than the Great Northern, in 1909. By 1914 the afternoon up Great Northern train was making the journey in 3 hrs. 25 mins., while the Midland stuck to its old time. Under war conditions, especially in and after 1917, everything became much slower.

Between London, Sheffield and Nottingham, there was competition with the Great Central, which made a special point of providing the fastest service to Sheffield although it had a slightly longer route (164¾ miles to the Midland's 158¼). In 1914 the best Midland train was in the up direction, taking three hours, while the Great Central had a down train which took 2 hrs. 57 mins. Between London and Nottingham (123½ miles Midland, 126½ Great Central) the fastest

Midland train made the journey in 2 hrs. 12 mins., compared with 2 hrs. 23 mins. on the Great Central. Both these times were in the down direction. There were 15 non-stop runs daily on the Midland between London and Nottingham. The fastest run on the M.R. in 1914 was one in the down direction between Appleby and Carlisle, 30·8 miles in 33 minutes (56 m.p.h.).

In its Anglo-Scottish services, worked jointly with the North British and the Glasgow and South Western, the Midland was again at a distance-disadvantage with its rivals. The distance from St. Pancras to Glasgow St. Enoch was 424½ miles against 401½ miles by the West Coast route. St. Pancras to Edinburgh Waverley was 407¼ miles compared with 393 miles from Kings Cross. Fastest time to Glasgow was 8 hrs. 45 mins. compared with the round eight hours on the West Coast. From St. Pancras to Edinburgh took 8 hrs. 40 mins. compared with eight hours by West Coast route to Princes Street and 7 hrs. 45 mins. by the East Coast, Kings Cross to Waverley. Nevertheless, many passengers preferred the Midland. In earlier days especially, it was easily the most consistently comfortable in respect of the carriages. Scenically it was a winner. The initial run to Leicester or Nottingham across the broad shires was very pleasant, and although some of the scenery between Sheffield and Leeds might satisfy few people except rubbernecking masochists, the Pennines and the Border hills were superb. The Midland carried more Scottish intermediate traffic than East or West Coast; the Glasgow and South Western and the North British between them gave direct service to such important places as Dumfries and Kilmarnock, Hawick, Melrose and Galashiels. For some time the company made a bid for remoter Scottish traffic; through coaches and sleeping carriages were run to Dundee and Aberdeen, and for a while to Inverness. Other interesting through carriage services were those from Birmingham to Southampton via Cheltenham and Andover (Midland and South Western Junction, and London and South Western Railways), Bristol to York and Newcastle, and Leeds to Torquay and Kingswear. In 1914 the Midland ran eighteen slip carriage services, being exceeded only by the Great Western, which had an astounding total of 70, and the London, Brighton and South Coast with 21. In 1888 the Midland had as many as 25 slips. They were first introduced on the M.R. in July, 1886, and vanished at the end of 1916.

From the foregoing notes it will be gathered that the Midland, while it had no such regular flights as those of the Caledonian between Forfar and Perth, and of the North Eastern between Darlington and York—in their time the fastest regular runs in the British Empire—was a good, snappy 55-miles-an-hour sort of railway, and one of its best features, which it had in common with

the North Eastern, was the smartness of some relatively short runs.

During and after the 1914-18 war, of course, things were right down. London to Edinburgh in 1921 occupied 9 hrs. 30 mins. I recall that we ran non-stop to Nottingham, then called at Sheffield, Leeds and Hellifield, dropping the pilot at Aisgill, before joining the North British at Carlisle, which was reached in 6 hrs. 38 mins. North of the Border, the North British called at Hawick and Galashiels. In the up direction the morning train out of Waverley was more leisurely. On the North British it stopped at Melrose, and on the Midland it favoured Chesterfield and Bedford—of course, *inter alia*. I also remember that at the last-mentioned place, one evening in September, 1921, it was flooded with local passengers, who even sat on the elbows of the dining carriage seats, exchanging spiteful glares with those who had reserved those seats. No, war had improved neither the Midland service nor polite manners!

But the same could be said, and in severer tones, about the service provided by most other companies. In 1920 there were no start-to-stop bookings at 60 m.p.h. or over; the Midland Appleby-Carlisle run at 56 m.p.h. being the fourth-fastest in the country, exceeded by one each on the Caledonian, Great Western and Great Central, in that order. Fifth, and next after the Midland, came two runs on the London and North Western, then one on the South Eastern and Chatham, and one on the London and South Western There were no other services in the country at 55 m.p.h. or over, by which standard the East Coast companies, even the North Eastern, were for the time being nowhere. Relations with the Glasgow and South Western Railway were always amiable, and at one stage they came nearly to the point of amalgamation. But at that stage it was realised that while the Sou' West was a Scottish railway, the Midland, unfortunately, was not, and was therefore disqualified.

The Midland earned favour in the war years by its maintenance of dining services on express trains. In the bleak winter service of 1918, it still ran 20 (out of a pre-war total of 64). Only the Pullman Car Company could equal this, entirely on the Brighton line, and, although admirable, was not entirely comparable. Runner-up among railway companies was the London and South Western with twelve. The Glasgow and South Western supported the Midland with two. There were then no dining cars on the Great Western, London and North Western, Caledonian, or any of the East Coast railways.

Midland perseverance in feeding its passengers under difficult conditions was due to the remarkable Towle family. Sir William

Towle was manager of the Midland Railway hotels and refreshment rooms from 1871 to 1914. He was responsible for Normanton in its great days, reorganised the Midland Grand at St. Pancras in 1884, and in the following years was given control of the elegant Adelphi in Liverpool, the Midland in Manchester, and many others. His sons, Sir F. W. and A. E. Towle, were joint managers of the Midland hotels from 1914, when the Old Governor retired.

Reverting briefly to the company's primary task, that of running a train service, one can think of many fine runs recorded of Midland locomotives at various times. Ahrons remarked on the excellent performance of many of the older engines, not least the Kirtley 800 class, which seemed to get better still, the more they advanced in years. He believed that metallurgical improvements, as in the composition of steel rails and tyres, had more than something to do with this. The standard Midland permanent way during the company's later years consisted of 45ft. rails weighing 100lb. to the yard, in 54lb. steel chairs. Very large chairs secured check rails and frogs. All the chairs were made at Derby, where there was a special foundry devoted exclusively to their manufacture. Is it fancy, or did the twelve-wheel dining carriages, on those long-ago journeys to Scotland, go hooraying over the 45ft. rails to the sempiternal tune of *the flowers that bloom in the spring—tra-la?*

Well, perhaps it was fancy, but the fanciful was ever hard to avoid. Realities conjured fancies. People who normally gave no regard to the railway except as a conveyance would yet find themselves engaged by such things as the triangular stations at Ambergate and Ashchurch, even though they failed to notice that the real, stately old station house at the former place was right away from the triangle, no longer serving its original purpose, but standing on a neat green mound between the Rowsley and Peak Forest line and the Ambergate avoiding line. Wingfield station house remains a priceless post-Regency pavilion.

Then, of course, there was Trent, with its wondrous complexity of junctions, so that a train which appeared to be going off to some place in the blue, not knowing Trent at all, would swing round and come in, a minute or two later, at the very platform from which the astonished traveller had been watching it, or where, as someone said, you could be fairly sure of getting into the right train if it appeared to be going in the wrong direction. An astounding place, Trent, with its big central island platform and buildings, and its labyrinth of connections, set down in the countryside, nowhere in particular, but vaguely contiguous to both Nottingham and Derby. The river was there, so they called the station Trent. Beyond the river stood the twin castellated portals of Red Hill old and new

tunnels. They are still there, imperishable monuments of the Steam Age which found relaxation in the Mediæval-Romantic à la Walter Scott. In earlier days there was no better place than Trent for watching every sort of Midland train coming and going, and opportunity was not lacking. A remarkable number of journeys seemed to involve changing there.

Chapter Ten

LAST YEARS

AT intervals, through the history of railways and locomotives, there arises in the technical journals and elsewhere a burst of acrid correspondence on the question of whether Mr. So-and-So really *designed* a locomotive or not. In very early days, the term " design " was frequently taken to mean " ordered to be designed," and the identity of the man who worked out proportions, schemed and prepared working drawings, was nobody's business. Thus, when Joseph Locke was engineer to the Grand Junction Railway, he was quoted as having designed what came to be known as the " Crewe Type " outside-cylinder engine. The G.J.R. had been having trouble with breaking crank axles, and Locke may well have said: " No more crank axles; put the cylinders outside! " William Buddicom and Alexander Allan then got to work, and the " Crewe Type " was the result.

Later, there was more hullaballoo over the origins of the *Jenny Lind*, about which several funny stories were told, while some people were most incensed when David Joy let out that he schemed the engine for Wilson and Fenton by the light of midnight oil. For a man who had been a back-room boy at E. B. Wilson's establishment to claim one of Wilson's most famous designs was, to many, an outrageous enormity. More recently still, the appearance of a drawing for a Great Northern Railway express engine, alternative to the famous Stirling eight-foot single, and signed by J. C. Park, resulted in some delightfully angry letters in the *Journal* of the Stephenson Locomotive Society. James Holden of the Great Eastern was an excellent man for carriages. His most famous locomotive designs, including the Claud Hamiltons and the great Decapod, were made for him by the late Fred V. Russell, who also produced the Great Eastern 4–6–0s officially ascribed to Stephen Holden.

What all this is leading up to is the question of whether Henry Fowler of the Midland ever designed a locomotive. He is reported as having once said, after dining, that he never did such a thing in his life. Only two really new designs appeared from Derby during the last years of the Midland Railway, one a banking engine for the Lickey incline, and the other a heavy goods for the Somerset and Dorset (and therefore strictly outside our present range). The other new engines were logical developments of the practice of Deeley, and Deeley in his turn followed Johnson in several marked particulars. Indeed, one can safely say that in the twentieth century Derby itself designed locomotives. The great works pupped at intervals, and the engines it brought forth were true-to-type

thoroughbreds, whether they were sired by Fowler or someone else

In what was still officially the "rebuilding" of the Johnson 4–4–0 express engines, the original Johnson line vanished completely. The platforms were rather higher than the tops of the buffer castings, as in Deeley's compounds and 999 class, and in consequence there was a narrow crimson panel above the vermilion one of the buffer-beam proper. The flattened Deeley smokebox door, secured by dogs round the perimeter, and with a cast-iron number-plate in the middle, remained the standard form; likewise the cab, splashers, parallel chimney with capuchon, uncased Ramsbottom safety-valves, and the further raising of the platforms each side to clear the throw of the cranks in passenger engines, which had appeared in the compounds and the nine-ninety-nines. The class 2 nominal rebuilds had all these features and resembled a smaller version of the 990 class. There was no longer, in Midland locomotives, the faultless grace which had distinguished such engines as Johnson's singles and his large-boilered 4–4–0 of 1900 and after, but they remained neat engines, and beautifully finished. Goods locomotives, however, and odd tank engines, were painted black. One of the second-named was the last survivor of the Metropolitan 4–4–0 tanks. This was No. 204, renumbered 1198. She had gone to Lancaster, painted black, in 1906, and ended her days soon after as a works shunter at Derby. The 0–4–4 tank engines, including the Kirtley double-framed veterans, continued to be painted red.

A prominent feature during Fowler's time at Derby was the mounting of steam brakes, with cylinders having opposed pistons, between the bogie wheels on each side. These persisted on the L.M.S. for some time, and one suspects that the arrangement must have imposed something of a strain on the bogies. Deeley had mounted similar steam brakes on the simple and compound express engines, but only between the coupled wheels. Another noteworthy feature on many of the older goods engines, and even on some of the beautiful singles, was a very ugly *ersatz*-looking cab on the tender. It has been stated that these were part of the blackout precautions against air-attack in the 1914-18 war,* but they made their first appearance on some engines as far back as 1908. They certainly saved the enginemen from the rigours of the weather, against which the little Johnson cabs were poor protection, especially on shunting duties.

The almost complete renewal of the old Johnson 4–4–0 engines began with that of No. 386 (old No. 1816) in 1909. The new stan-

* It was a dim-out rather than a blackout in Zeppelin time. The policeman's admonition was: "You're showing *too much light*!"

dard boiler had 1,410 sq. ft. of heating surface, of which the Belpaire firebox furnished 127 sq. ft., with a grate area of 21·1 sq. ft. Working pressure was 175lb. per sq. in. Superheater boilers used in rebuilding the compounds had a total evaporative heating surface of 1,321 sq. ft., that of the firebox remaining unchanged at 151 sq. ft. The superheater gave 360 sq. ft., making a combined heating surface of 1,681 sq. ft. Working pressure was reduced to 200lb. from the original figure of 220lb. per sq. in. (original, that is, in the Deeley engines; the Johnson 2631 class as first built having had 195lb.). Twenty-four of the Midland compounds, including all five of the original Johnson engines, had been rebuilt with superheaters by the end of 1922, as well as all the 999 class simple engines.

Numbers and classes of all the Midland locomotives in service at the close of the company's separate history will be found at the end of the book.

The final standard Midland goods engine was the heavy 0–6–0, which was subsequently adopted by the London Midland and Scottish Railway. It was a development of the Deeley goods, and 192 examples were built up to the end of 1922, after which hundreds more were built by the L.M.S., not only at Derby but at Crewe and St. Rollox. They first appeared in 1911, but the main flow of new construction was from 1917 onwards. Main dimensions of these very useful engines, extremely numerous to this day, are as follows: Wheels, 5ft. 3in. diameter; cylinders (with piston valves), 20in. by 26in.; heating surface (tubes) 1,045 sq. ft., (firebox) 125 sq. ft., (total evaporative) 1,170 sq. ft., (superheater) 313 sq. ft., giving a combined total of 1,483 sq. ft.; grate area, 21·1 sq. ft.; working pressure, 160lb. per sq. in.; weight in working order without tender, 49 tons 2 cwt. Noteworthy, in comparison with the Deeley goods, was the drop in the working pressure from 175lb. and the increase in the cylinder diameter from 18½in.

In 1914 Derby Works produced six heavy goods engines for the Somerset and Dorset Joint Railway, which were very much bigger than anything of the kind built for the Midland. They were 2–8–0 with 21in. by 28in. outside inclined cylinders. It may be wondered why work was not found on the M.R. for the same class, Derby having gone to the trouble of designing and building it. The fact was that the Midland authorities felt that they were getting along perfectly well as things were, with their immensely long goods trains plodding doggedly along behind 0–6–0 engines in pairs. The Somerset and Dorset situation was somewhat different. There, heavy coal trains had to be worked from Radstock to Bath, and also on the heavily-graded line across the Mendips, preferably without recourse to double heading. A boyhood thrill now recalled from about 1917

was the spectacle of a trainload of Mark V tanks, heavily sheeted, rolling southward through the Dorset meadows behind one of the Derby 2–8–0s. These engines had tender cabs, similar in contour to the main cabs, and much better looking than the angular things on the old Midland goods engines. These heavy Somerset and Dorsets were the largest locomotives, by far, that had yet been built in Derby Works, and except in superficial details—shape of cab, chimney, outline of boiler—and in the tenders, they were unlike anything on the Midland Railway.

But a relationship became apparent with a new heavy banking engine built for helping trains up the Lickey incline in 1919. No locomotives had been built specially for this work since McConnell had built the *Great Britain*, back in the middle of the previous century, and up to now banking on the Lickey had been done by standard Johnson 0–6–0 goods tank engines, or by similar engines built in more recent years, working in pairs, or even threes.

"Big Emma," as she came to be known, was a whale of an engine, much bigger than anything else on the Midland Railway, and the only locomotive at work in the country with ten-coupled wheels. It might be remarked at that time that the 0–10–0 type was a common form of heavy goods engine in some countries abroad, notably in Prussia, Saxony, Bavaria, Austria and Russia, while Italy had built a noteworthy class for banking and hauling all kinds of trains over the Appenines in Umbria and Tuscany.

But in England, the Midland Decapod came as a prodigy, the only previous example of this type having been the purely experimental tank engine No. 20 on the Great Eastern Railway, which was soon converted into a rather sorry-looking 0–8–0 goods. Leading dimensions were as follow: Cylinders (4), 16¾in. by 28in.; wheels, 4ft. 7½in.; heating surface (tubes) 1,560 sq. ft., (firebox) 158·25 sq. ft., (total evaporative) 1,718·25 sq. ft., (superheater) 445 sq. ft., (combined total) 2,163·25 sq. ft.; grate area, 31·5 sq. ft.; working pressure, 180lb. per sq. in.; weight in working order without tender, 73 tons 13 cwt. 1·6 qr. Two pairs of Ramsbottom safety-valves were mounted over the Belpaire firebox, as in the Somerset and Dorset heavy goods. The same tender with cab was employed. The cylinders were on an incline of 1 in 7, with two piston valves mounted on top, outside, for all four cylinders. The use of ten-coupled wheels kept down the axle-loads, the highest of which was 15 tons 10 cwt.

For well over thirty years, this redoubtable locomotive has been in service on the Lickey incline. She is scarcely changed from her original form, save by a chimney variation, reduction of the coal

side-sheets, and the mounting of a powerful electric headlamp, the only one in use on British Railways. In view of her already advanced years, and the arduous nature of her daily work, one wonders how much of the original fabric survives. After the electrification of mineral lines in the Wath-upon-Dearne area, the ex-London and North Eastern six-cylinder Garratt engine used for banking there was sent down to try her works on the Lickey. The men of Bromsgrove seem not to have been amused. One wonders whether Big Emma will continue to butt her trains up to Blackwell until atomic power stations finally blow steam out of the railway world.

It may be remarked that its steepness, necessitating the banking of all trains except the very lightest (the author recalls being banked by the big engine with a load of three clerestory eight-wheelers) is not the only stumbling-block of this great bank over the Lickey Hills. It is also a bottleneck, a double-track section with four-track approaches, and carrying a very heavy traffic. The length of the 1 in 37·7 rise is 2 miles 4 chains from a point just beyond the Birmingham end of Bromsgrove station to one just on the south side of Blackwell. The Midland Railway quadrupled the track between Bromsgrove station and south junction, and this was extended by the L.M.S. to Stoke Works junction, the divergence of the original Birmingham and Gloucester line through Spetchley, and the loop through Droitwich and Worcester.

The Lickey banking engine was the largest ever built at Derby for service on the Midland Railway, and her design concludes the company's locomotive history within strict limits. As remarked, Derby had also been responsible for locomotive design on two of the numerous joint railways to which it was a party, the Somerset and Dorset and the Midland and Great Northern. But on January 1, 1912, the London, Tilbury and Southend Railway was added to the Midland system, and although this was, by comparison, a small railway, it was a highly individual one, with a locomotive tradition all its own.

The Tilbury Railway was promoted by the old Eastern Counties and the London and Blackwall Railways and was first opened in 1854, when it was leased for 21 years to Peto Brassey and Betts. It was not incorporated as a separate company until 1862. When the lease expired, the Tilbury company took over its own system, which, in its final form, consisted of a main line from Gas Factory Junction to Tilbury, Pitsea, Southend and Shoeburyness, a cut-off between Barking and Pitsea, over which the through Southend traffic was run, and an end-on branch to join the South Tottenham and Forest Gate line, east of Barking, giving direct access to and

from St. Pancras via the South Tottenham and Hampstead Junction Railway. From Upminster, on the Barking-Pitsea cut-off, a branch went north to Romford, and another south to join the Tilbury line between Purfleet and Grays. From Gas Factory Junction there were perpetual running powers over the London and Blackwall Railway into Fenchurch Street station, and direct end-on connection was made with the Metropolitan District Railway by a joint line, the Whitechapel and Bow Railway, opened in 1902. There were goods branches from Stanford-le-Hope to Thames Haven, and another, off the London and Blackwall, to Commercial Road Whitechapel. Route owned or partly owned came to 87 miles 29 chains. Steam ferries plied between Tilbury and Gravesend.

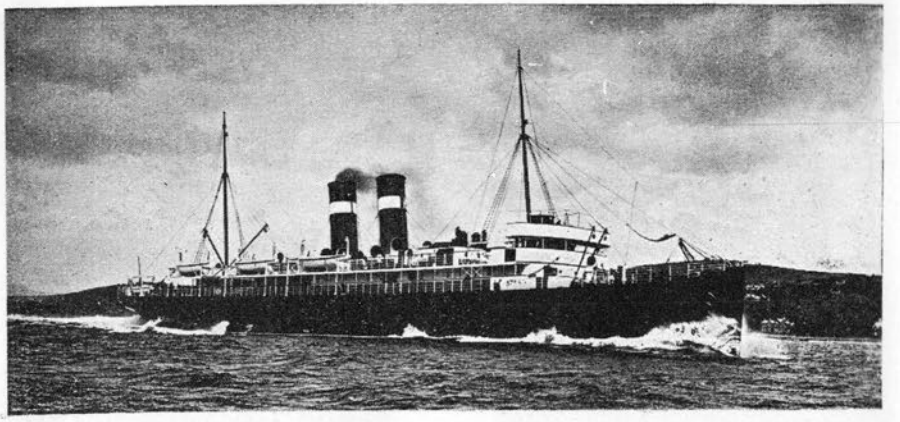
The Tilbury was in every way a very different railway from the Midland. Although it served Tilbury Docks, its goods traffic was relatively slight. But in relation to its route mileage, its passenger traffic was enormous. In 1910 it carried over thirty-two million passengers, excluding season-ticket holders, and these last amounted 40,576. For those who like statistics, it may be remarked that ordinary passenger traffic was equivalent to about 330,000 passengers per mile per year. The corresponding figure on the Great Eastern Railway, which knew something about passenger density, was 80,000 per mile per annum.

From 1875 the Tilbury company used Great Eastern locomotive power to work its trains. The Great Eastern locomotive superintendent at that time was William Adams, later of the London and South Western, and there is now no doubt of his practice in the design of a series of very handsome 4-4-2 express tank engines which were built by Sharp Stewart and which first appeared on the Tilbury line in 1880. These belonged to the Tilbury company from the start; by the time they came out, Adams had left the neighbouring Great Eastern, and their authorship remained officially anonymous. They had 6ft. 1in. coupled wheels, a very large diameter for tank engines at that time, 17in. by 26in. cylinders, and 160lb. pressure. The leading bogie was, of course, Adams's classic type, and the trailing axle was on a modified Bridges Adams radial arrangement, with William Adams's spring control. This became the standard Tilbury engine, for all sorts of traffic, and later examples were progressively increased in size by T. H. Whitelegg, the Tilbury locomotive superintendent at Plaistow. The original engines anticipated London and South Western practice, for no 4-4-2 Adams tanks were ever built for the Great Eastern. They had the plain chimney which Adams revived from Robert Sinclair's conventions, and the small domes which were to distinguish early Adams engines on the South Western.

By 1909, Mr. Whitelegg's development of the original Tilbury type had reached an engine with 6ft. 6in. coupled wheels, 19in. by 26in. cylinders, 1,130 sq. ft. of heating surface, and a working pressure of 170lb. per sq. in. No. 80, *Thundersley*, built by Robert Stephenson and Company in 1909, was shown at one of the White City exhibitions when new, and was painted in a purplish grey officially described as "lavender." In 1911, repainted in the Tilbury's standard rich middle green, with claret platform valances, she was specially decorated in red, white, and blue garlands to celebrate the Coronation of George V, with huge pedestalled busts of the King and Queen Mary on the front platform, with a fountain playing between. The fountain did not run wine, as did one in Cheapside on a much earlier occasion, for it was fed by the side tanks, but it was a memorable sight nevertheless. *Thundersley* was further specially finished, with gold lines, blue edging, brass lagging bands with bright steel edges, and nickel-plated chimney cap and safety-valve casing. On Coronation Day she worked a train from Fenchurch Street to Shoeburyness in this astounding guise, and on the following day took the Orient Line boat train from St. Pancras to Tilbury. A coloured plate, from an F. Moore picture, occurs in Protheroe's *Railways of the World*. A similar locomotive spectacle had honoured the Coronation of Edward VII.

Up to the end of the Tilbury company's separate existence, all its engines were of the 4–4–2 tank type, except for some small 0–6–0 goods, which had originally been intended for Turkey, and 10 0–6–2 goods tanks. The tank engines were all given names after places served by the railway. Nobody saw anything incongruous in naming an engine *Mile End*.

The last locomotives to be designed for the London, Tilbury and Southend Railway formed a class of eight 4–6–4 tank engines, of very imposing appearance. They were the work of R. H. Whitelegg, and anticipated the superb express tanks which he was later to build for the Glasgow and South Western Railway. The coupled wheels were 6ft. 3in. in diameter; the cylinders, outside, were 20in. by 26in.; total heating surface (evaporative), 1,296 sq. ft., superheater, 383 sq. ft., making a combined total of 1,679 sq. ft.; pressure, 160lb.; weight in working order, 94 tons 6 cwt. These were not ready until the Tilbury was absorbed into the Midland. Weight restrictions barred them from Fenchurch Street, so they could only work in and out of St. Pancras. A very fine model of one, in Tilbury colours, adorns the Science Museum collection at South Kensington, but in fact the engines began their careers in Midland red. A summary of the Tilbury engines follows that of Midland engines in the Appendix.

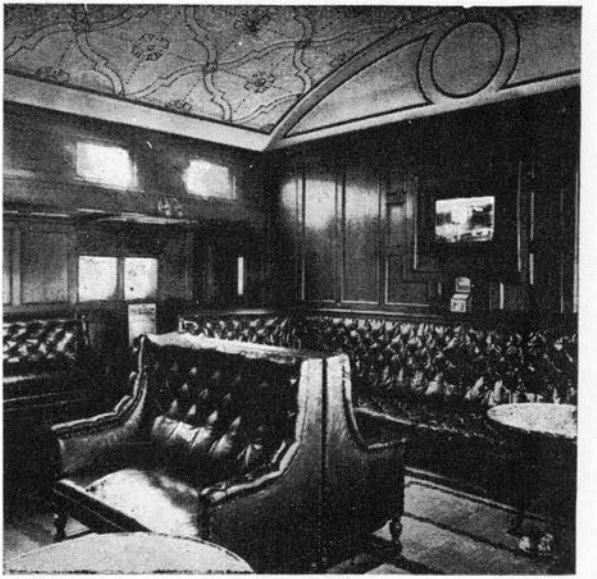


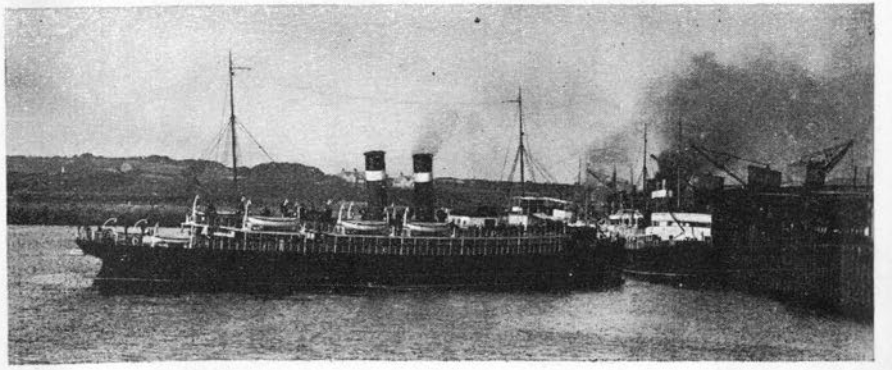
Above: The *Antrim*: twin-screw steamer built by John Brown and Company, 1904. (Sold to the Isle of Man Steam Packet Company and renamed *Ramsey Town*. 1928.)

Right: Smoking-room on the *Antrim*.

Below: The *Londonderry* at Heysham; built by William Denny, 1904: sold to the Angleterre-Lorraine-Alsace Company and renamed *Flamand*. 1927. Midland steamship colours: Black hull. white upperworks, red boot-topping; red funnels with white band and black top; house flag bore the Wyvern.

[*British Railways*



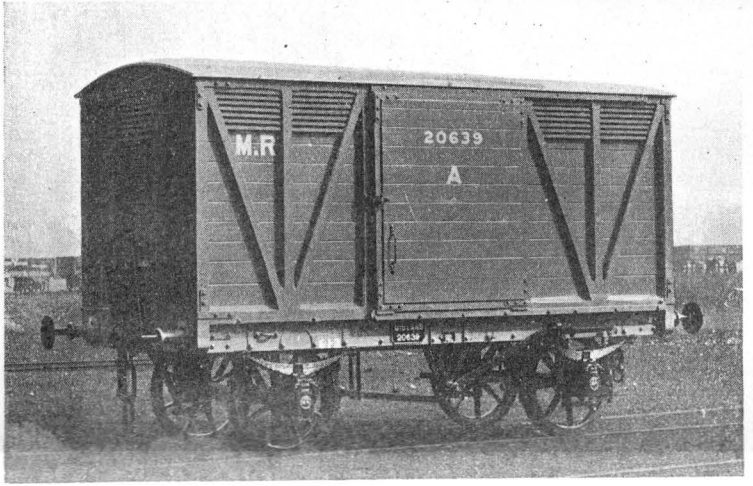


Right: Thirty-ton steel loco. coal wagon, built by the Leeds Forge Company in 1902.

Below, left: Eight-ton covered goods wagon, built 1896.

Below, right: Six-wheel steel-frame goods brake, built 1912.

[*British Railways*



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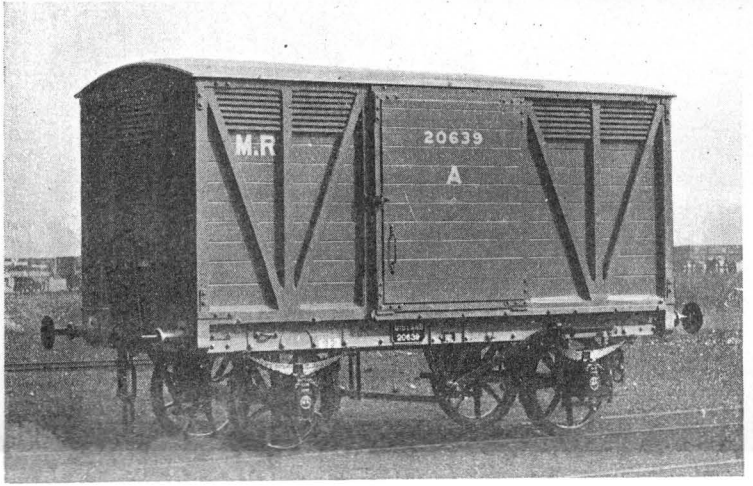
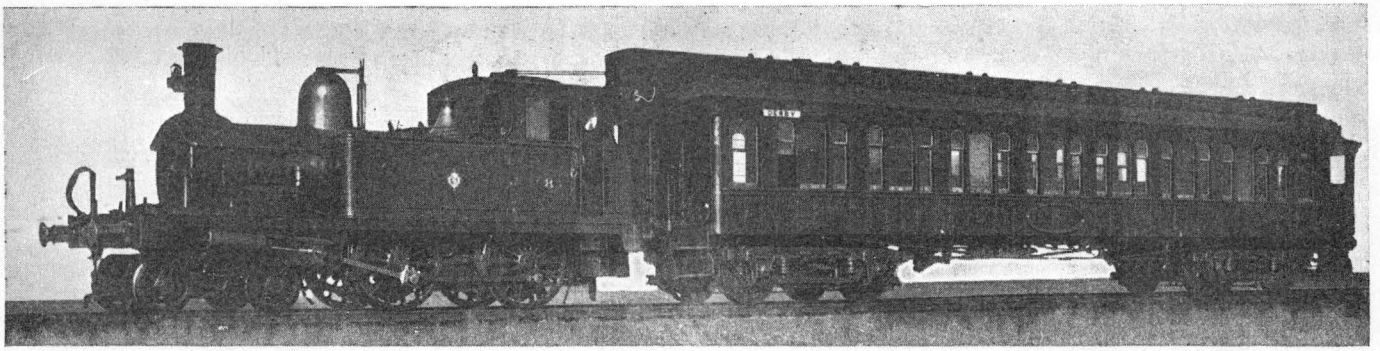


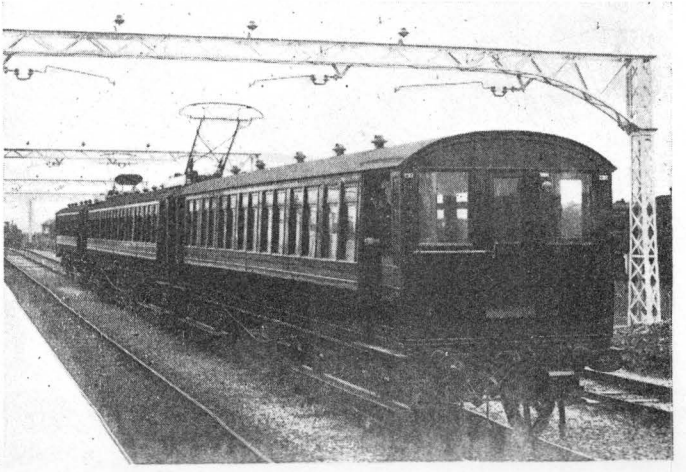


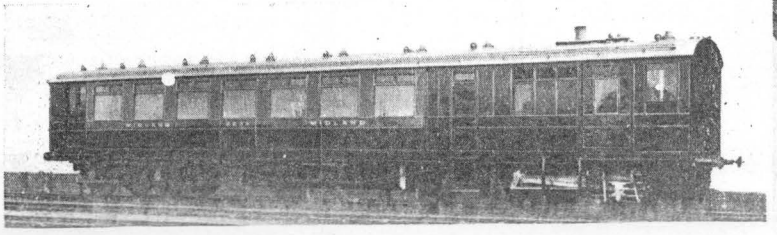
Above: Pullman to push-and-pull: Midland & Great Northern Joint tank engine No. 8 with one of the original Pullman cars of 1874 converted into a control-trailer.

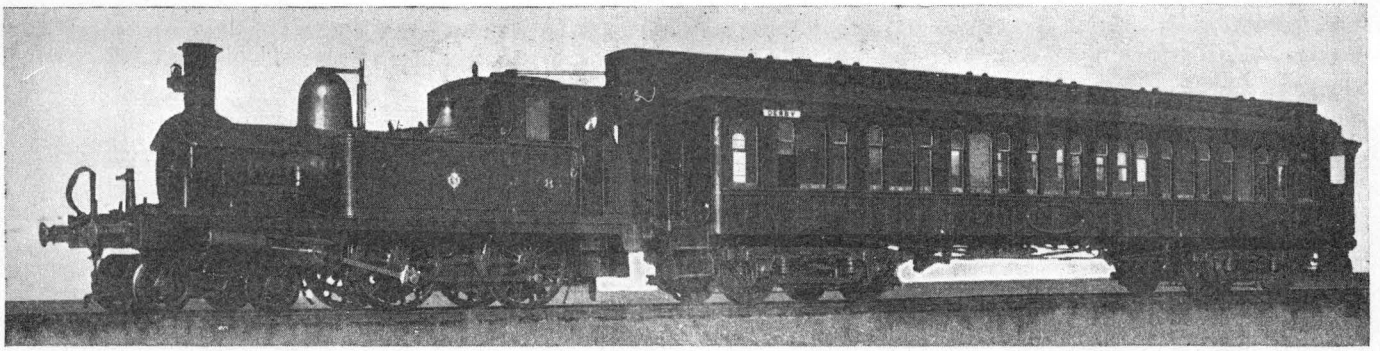
Right: Electric train, built by R. M. Deeley and David Bain, at Morecambe new station on the Lancaster, Morecambe and Heysham converted lines.

Below: Steam rail-motor for the Morecambe and Heysham service before its electrification, built by R. M. Deeley and David Bain.

[*British Railways*







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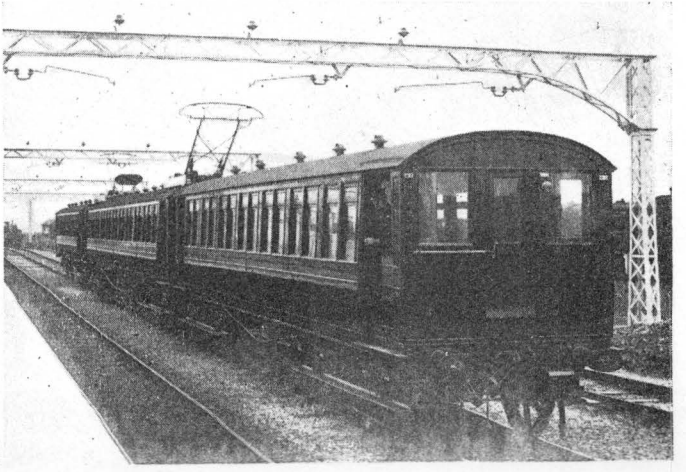

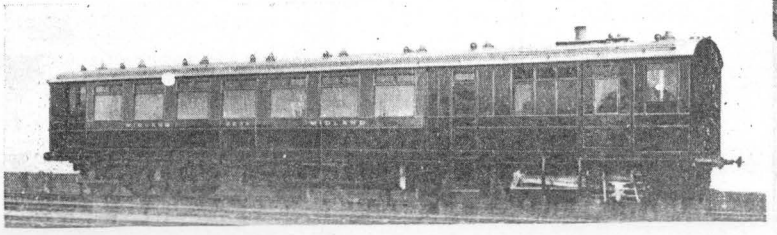

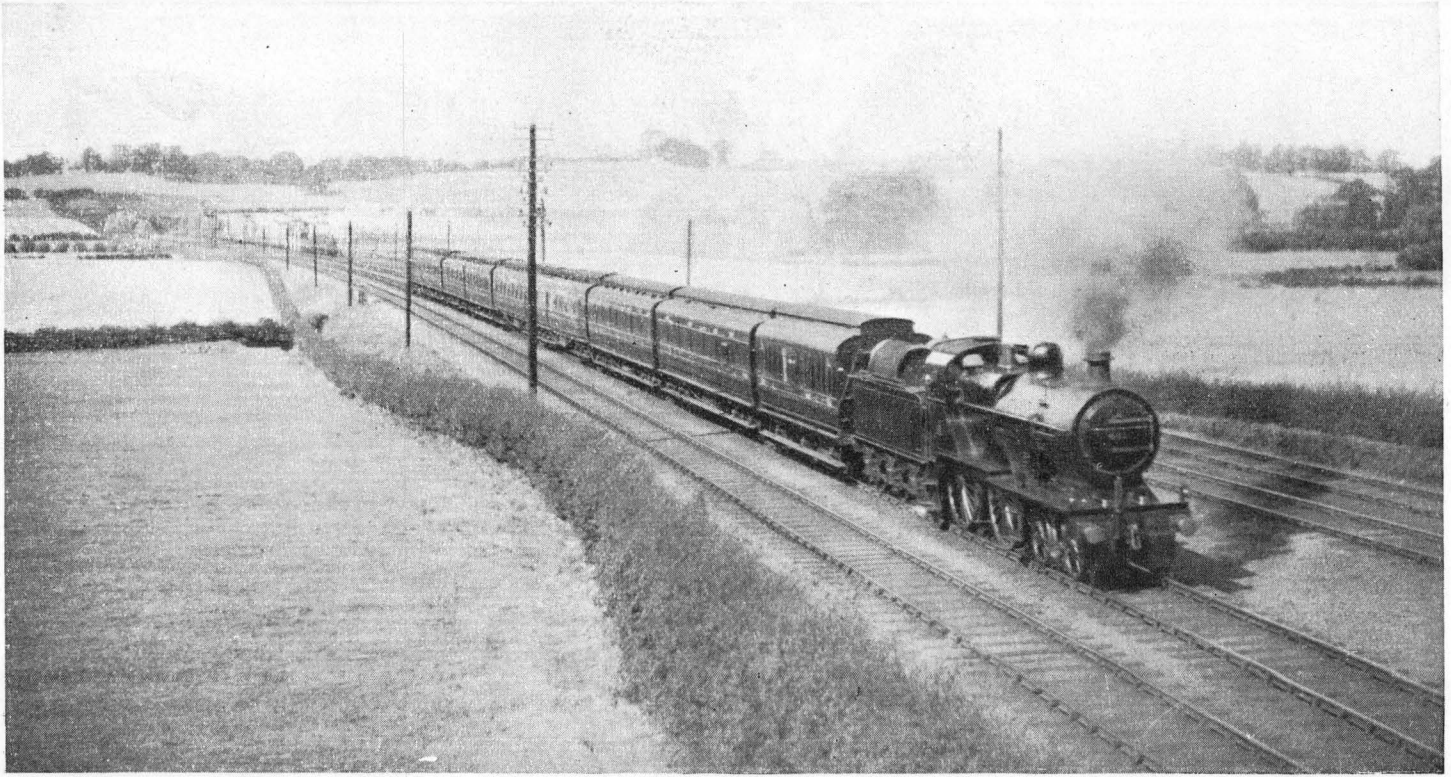

[*W. H. Whitworth*

Up Manchester dining express south of Red Hill Tunnels, Trent. The engine, Class "2," No. 491, had been fitted with oil-burning equipment during the coal shortage in 1921 ; the train is composed entirely of David Bain's later carriages, electrically lit.

London, Tilbury and Southend carriages were good on the whole, though for a long time the company had stuck to foot-warmers in winter. On the other hand, it had never lit its coaches by gas, going straight from rape oil to electric light. The morning business trains between Shoeburyness and Fenchurch Street, and the corresponding evening down trains, loaded up to thirteen eight-wheel non-corridor coaches, providing seats for 160 first- and 740 third-class passengers. The only corridor stock consisted of some vestibuled saloon carriages used on through trains from Ealing, via the District Railway, to Southend. The carriage livery was varnished teak, and this was perpetuated for Tilbury stock by the Midland company, except in the case of some new coaches built at Derby. The brake-ends were vermilion.

Through trains between the Tilbury line and Ealing were taken over the underground lines by small District double-bogie electric locomotives, working in pairs. These had originally been built, when the main electrification of the District Railway took place, for hauling Outer Circle trains between Mansion House and Earls Court, but this service, in its entirety, did not last for long after that. Up to 1915, a London and North Western push-and-pull train with an old Webb tank engine used to work from Willesden to Earls Court, after which it was superseded by a London and North Western electric service, which became the last relic of the Outer Circle. The Midland continued to work goods trains through to Kensington, and through the Metropolitan tunnels to join the South Eastern and Chatham Railway, as well as its ancient passenger service to Moorgate. Johnson's 0–6–0 and 0–4–4 tank engines exclusively worked these trains. In the very early days of the Tilbury line's connection to the District there were instances of L.T.S. 4–4–2 tank engines, fitted with condensing apparatus, running right through to Ealing, but they were isolated, and I have no detailed record of these workings. The Tilbury condensing engines were painted black, a colour which Mr. Whitelegg Senr. doubtless considered quite good enough for such gloomy regions as those reached via the Whitechapel and Bow Railway. Further, the Tilbury company owned 37 electric motor coaches, and the same number of trailers. These were of standard District Railway design, but in early days they were painted, not the usual District scarlet with claret top-quarters, but in a dark green rather like that adopted for the London and South Western electric trains in 1915. They were soon painted scarlet to match the District cars, but as late as 1917 and 1918 I used to see them lettered, along the dark top-quarters: "L. T. S. RAILWAY." By that time, the Tilbury steam stock, though still in the varnished teak finish, was lettered "M. R.," with the Midland arms below.

Under Midland ownership, the London, Tilbury and Southend Railway continued to be very much its own old self. A Midland District Control was placed at Plaistow, and the locomotives were somewhat altered in appearance by being given Midland chimneys, and painted in Midland red, with large figures on the tank sides. They did not keep their old names. Alas for *Thundersley*, and likewise for *Burdett Road*! The Tilbury was on the whole a good little railway; its trains were much more agreeable than many of the things with which other parties favoured the country on either side of London River, and if the habits of some of the merry trippers from East End to Southend were, in delicate Victorian phraseology, " curious," one could not blame the company, which did its best to keep the carriages clean.

In its final years, from the outbreak of the Kaiser's war to the formation of the L.M.S., the Midland retained very much the same aspect which it had presented in better days. The trains were smart, handsome and clean. I do not remember that they ever approached the state of war-time shabbiness which unfortunately came to distinguish many other lines, especially its partner the North British, and, at the other end of the country, the woeful South Eastern and Chatham. As we have seen, it kept its dining facilities going as far as possible when its neighbours on either side simply dropped them It had one bad accident during the war. The gory year of 1915, when the Great Eastern, the London North Western and the North Eastern all had major smashes, and the Caledonian suffered a massacre, was safely passed by the Midland. But on January 19, 1918, there was more trouble on the Settle and Carlisle line. North of Leeds, the 8.50 a.m. Glasgow express out of St. Pancras consisted of eleven of the usual clerestory carriages, filled with passengers, and headed by compound engine No. 1010. There had been a sudden thaw, and at 3.40 in the afternoon, as the train entered Throstle Hall cutting, between Little Salkeld and Lazonby, the clay bank collapsed ahead of it, blocking both roads. Ploughing into the soft, sticky obstruction, the train behaved very much as the colliding express had done at Hawes Junction in 1910. No. 1010, going off to the left, lay down against the side of the cutting, and the first and second carriages packed up and telescoped behind the tender. The train had been on time, and running at about 55 m.p.h. Haply, the broken-up coaches did not catch fire, but seven passengers were killed by telescoping. The engine was not much damaged, though one of the injectors was broken, and the wreckage was for a while hidden in clouds of steam.

It seemed as if No. 1010 were an unlucky engine about this time and after. She got into minor troubles on various occasions, and in L.M.S. days she was in another major smash, again at Little Salkeld,

and this time right in the station yard. This was when working the up Thames-Forth express on July 10, 1933. The train was in collision with a shunting goods; No. 1010 was severely damaged, and lost one of her low-pressure outside cylinders on impact.

At the beginning of the nineteen-twenties, most of the best passenger traffic was being handled by the class 3 4–4–0 engines of late Johnson design, most of them rebuilt under Fowler's direction, since 1913, with superheaters and extended smokeboxes. The compounds were all on the best trains at this time, though, of course, they were a less numerous class than the class 3. The latter were the heaviest express engines on the Birmingham, Gloucester and Bristol line at that time. The weight of trains had greatly increased, and double-heading was as common as ever it had been. All sorts of older engines were used for piloting the fast trains. One could see a Kirtley 2–4–0 piloting a compound, a nine-ninety-nine, or a class 3 many times; class 2 piloting class 3 was common. Compound piloting compound was not unknown; I have a very clear recollection of two compounds backing on to the down Scotchman at Nottingham at lunch-time, and lifting the first course (potato soup) into some of the passengers' laps in the diner. The still numerous bogie singles were to be seen both on the London line and as express pilots on the West of England trains.

The oldest and smallest 4–4–0 express engines, the only ones which had not been rebuilt, made a rarer sight, but the several varieties of 2–4–0 were to be seen on many kinds of train. At that time, although somewhat altered externally at the front, with Deeley's parallel chimneys and rather ugly smokebox doors, they were much the same as in Johnson's days. The mounting of boilers with Belpaire firebox and closed dome was a later development, carried out under the L.M.S. The old outline was sadly missed on the rebuilt engines. Most goods traffic was handled by 0–6–0 engines galore. No Beyer-Garratts then!

The Tilbury line services were worked almost exclusively by the several varieties of 4–4–2 tank engine. The Whitelegg 4–6–4 tanks spent a considerable time on goods workings from Wellingborough shed, but some reappeared on passenger trains between London and Luton about the end of 1920. They had no water-scoops, and when the Wellingborough-London goods workings were rearranged, with one water-stop at Luton going up, and a non-stop run returning, the Tilbury tank engines were on the spot. Hence their appearance on the Luton passenger trains. The history of these engines was not entirely happy. It was a pity that they came out after the old Tilbury company had lost its identity, otherwise their introduction might have been carried out with more sympathy.

The same might be said for the same designer's express tank engines on the Glasgow and South Western Railway, just before formation of the L.M.S.

In 1921, owing to labour troubles in the coal industry, there was an acute shortage of railway fuel. The Midland Railway equipped many of its 4–4–0 express engines with oil-burning equipment, having two prominent cylindrical tanks on top of the tender. The alteration was carried out with great smartness and success in working. At this sort of thing, Sir Henry Fowler* was particularly good. Other companies did likewise, though on a more limited scale, not comparable with that of the Midland. The most thorough treatment given on another line was the conversion, by the Great Central, of all the large 4–6–2 tank engines which worked its suburban trains out of Marylebone. If readers can bear with another very brief personal reminiscence, it is of a journey made in 1921 which began at St. Pancras, burning oil, and ended at Connel Ferry on the Caledonian, burning slack and logs mixed.

There is really not much to write about the later coaching practice of the Midland Railway. Mr. Reid's carriages were few, owing to war-time restrictions on building, and generally followed Bain's practice but without the clerestory to the roof, and consequently deeper curves to the ellipse. Several fully-equipped ambulance trains were built during the war, for the British, and later the American Expeditionary Forces. Many of the main-line railways contributed such trains. Midland examples were to be seen in France and Belgium, and at least one was to be found in the Middle East, serving the Turkish campaign in Palestine and Syria. It used to work to and from bases in Egypt, via a temporary bridge at Kantara.

Among the last carriages built at Derby for Midland Railway service were several diners for the Midland and Glasgow and South Western Joint Stock. These closely anticipated L.M.S. practice of the nineteen-twenties, and appeared in 1921. They consisted of three first-class cars with kitchens, on six-wheel bogies, 65ft. long, and three eight-wheeled third-class, 59ft. Each pair provided seating for 22 first-class and 42 third-class passengers. A break was made with former conventions, for they were lettered "DINING CAR." As already remarked and often implied, through most of Midland history every passenger vehicle originating at Derby was a *carriage*, unless it happened to be a saloon.

When the Midland became part of the London, Midland and Scottish Railway on January 1, 1923, it seemed to some that it had

* He was knighted for services in the 1914-18 war.

not so much lost its identity as acquired an empire. Sir Guy Granet was chairman. J. H. Follows was general superintendent. R. W. Reid was given command of the carriages and wagons under the new company. But the general manager was Sir Arthur Watson, who had become general manager of the London and North Western when it amalgamated with his old line, the Lancashire and Yorkshire, at the beginning of 1922. George Hughes, who had been on the L. & Y. for many years, became chief mechanical engineer of the L.M.S. Under him, Sir Henry Fowler was deputy C.M.E. H. P. M. Beames, C.M.E., of the old London and North Western, was mechanical engineer, Crewe, and William Pickersgill, C.M.E., Caledonian Railway, was mechanical engineer, St. Rollox One had rather the impression of a revolutionary army before the post-revolutionary purge, with a plethora of generals. In 1925, Mr. Hughes retired. Fowler, the old Lord-in-Waiting, succeeded him as chief mechanical engineer of the largest joint-stock company operating a railway anywhere in the world.*

With the locomotive history of the L.M.S. this book must not be allowed to concern itself in detail. It will be remembered that under Fowler's sway, Midland type locomotives, many of them obsolescent, were built new for service all over the system, on the ex-L.N.W.R. lines of the Western Division, but more particularly in Scotland. It was a pity, but it might have been worse. They consisted, variously, of a modified version of the old and excellent Deeley compounds, and of hundreds of standard goods, class 2 4–4–0, and shunting tank engines, as well as a characteristic Derby design of 0–8–0 goods which, nevertheless, had never appeared in Midland days. The L.M.S. standard compounds had 6ft. 9in. coupled wheels and superheater boilers, and the first forty, built at Derby in 1924, had the cylinder diameters increased to 19¾in. (high-pressure) and 21¾in. (low-pressure). These were really the last Midland Railway express engines, though they appeared in the year following amalgamation. The cylinders were later lined-up to the old diameters, which were perpetuated in a hundred more of the class built under L.M.S. auspices. Pressure was 200lb. Like the original Midland compounds, these had some magnificent work to their credit. At the same time, they were small engines for the middle nineteen-twenties, and sometimes too much was expected of them. They, and some of the originals, managed to last into the nineteen-fifties. The L.M.S. version was not so well favoured as Deeley's, owing to Scottish loading-gauge restrictions, involving a flat-top dome.

*The L.M.S. had a rather greater route mileage than that of the Illinois Central System, and a heavier traffic than any American railway company, although several considerably exceeded it in miles of first track.

A list of all the Midland locomotives at the formation of the London Midland and Scottish Railway is given in a concluding summary. It will be seen that the Midland tradition of longevity was maintained to the last, and, as previously remarked, some very old Midland engines managed to outlast the London, Midland and Scottish Railway itself. Midland coachbuilding traditions persisted on the L.M.S., with R. W. Reid's rather plain-looking elliptical-roofed carriages. Much use was made of end-vestibuled coaches, with one drop-light and one quarterlight to each section, an arrangement begun with Clayton's diners of 1896 and after. This type of coach, based on the third-class diners, had made its appearance under Bain as far back as 1907, when Derby built a series for long-distance excursion traffic. An ostensibly new train, which appeared on the St. Pancras-Bradford service about contemporaneously with the first L.M.S. series of compounds, had saloon brake-thirds of patently Bain inspiration, with clerestory, gaslight and all, though the rest of the train followed the newer conventions. They were probably old, and appeared to be the brake-end version of the Bain excursion stock. Still, the L.M.S. having shown its willingness to go on building old Midland engines, one could not be sure that Derby might not build " the vestibuled brake-third, as per previous order."

In the early days of amalgamation, too, Midland coaches were transferred to other lines. They appeared on the West Coast expresses, whereon their massive, red, clerestoried forms added a bizarre note to the already up-and-down aspect of many London and North Western expresses. The North Western, to its great credit, was one of the earliest users of corridor express trains, but a latter-day consequence of this was that in the nineteen-twenties much of the West Coast corridor stock was of very old type. A single West Coach Scotch express would sometimes include carriages of four different contours, even before the arrival of the imported Midland coaches.

Many other Midland vehicles went to Scotland, notably to the Highland, which had been practically a non-corridor line, and which now acquired diners and the coaches to run with them. An old Bain clerestory diner was working between Inverness and Helmsdale, in the Scottish Region of British Railways, quite recently, long after its like had vanished in the South.

The London and North Eastern Railway, also, acquired a considerable number of Midland clerestory vehicles, as its share in what had been the Midland and North British Joint Stock. In the nineteen-thirties they were being used on the Edinburgh-Inverness through day service, and in 1932 I encountered a complete set on

the Edinburgh-Aberdeen service. L.N.E.R. brown graining, intended to look like varnished teak, did not suit them, but riding in them was a treat compared with using the common North British article. In the old days, changing for Melrose at Hawick, from the stately Midland " ullman " to its North British camp-follower, was something of a shock to those not used to it.

For some time there was a strong outward suggestion of the Midland Railway in the new London Midland and Scottish. But it began to fade, with the quality of the crimson paint. Then the Midland-Scottish express services were allowed to go down in favour of the West Coast. Many of the once-proud engines—the cleanest in the world, in their day—reached a repellent state of dirtiness under the impact of the Josiah Stamp régime on the L.M.S. The beautiful carriages lost their spruceness, and it became less easy for younger people to realise what a very fine railway the Midland had been.

It is easy to rage over departed glories, but it can be unfair and unseemly, like mocking an old lion in a circus. In this case of a railway, we should consider first how such things came to be. The railways were built for a monopoly of mechanical transport, divided among themselves. Victorian Government had taken care to prevent railway companies from having absolute monopolies, hence the duplication of main lines between the same places, and the allowing of companies to build uneconomic lines against one another. This, in the mind of Victorian democracy, guarded against their becoming too rich and therefore too powerful.

When the motor car came, the balance was upset. Railways had been financed and built for a measure of monopoly which they quickly lost, and could never have again. This was the problem facing Lord Stamp, as he became, as head of the largest British railway company. Stamp was a brilliant economist, and at the same time a very clever business man, not a commonplace type. With a genial manner and exterior, he had the cool, lucid mind of an ascetic and abstemiously-living magnate who began as a diligent, chapel-going office-boy. He had to run a railway without upsetting the economic fruit-barrow. The only way, with the roads humming to the grim music of invisibly subsidised motor traffic in fierce competition, was by coldly ruthless economy. The old, spacious way of running a great and good railway, with single-crewed engines working a relatively low daily mileage, and a great amount of time spent on the keeping-up of appearances, was gone for ever.

Such a railway had been our Midland, and unlike some railways it maintained a great measure of its old dignified elegance right

through the lean war years of 1914-18, and the labour upheavals which followed them. St. Pancras stood firm, though bombs battered it in that war as well as in the one that came after. Modesty is naturally a scarce virtue in any publicity department, which has to be constantly selling something, whether it be transport or beer or razor-blades. The public has got to be reminded that such a route is preferable, that beer is best, that ladies are supposed not to like beards. The London and North Western Railway had called itself the Premier Line, which, for all its several virtues, it was not. The Midland, with a more carefully-studied conceit, styled itself *The Best Way*. In many respects, in the comfort and convenience accorded to its passengers, in its steady conveyance of enormous quantites of coal and wool into the great metropolis, and even in its peculiar stateliness, its claim was as well justified as those of any other railway company, and more so than the claims of most For, indeed, the Midland was a very great railway.

Appendix A

GENERAL SUMMARY

Opening Dates of Principal Lines

1832	*July 14*	Leicester and Swannington Railway
1838	*October 31* ...	Sheffield and Rotherham Railway
1839	*June 4*	Midland Counties, Nottingham to Derby
„	*August 12* ...	Birmingham and Derby Junction, Derby to Hampton
1840	*May 5*	Midland Counties, Trent to Leicester
„	*May 11*	North Midland, Derby to Masborough
„	*July 1*	Midland Counties, Leicester to Rugby
„	*June 30*	Midland Counties reached Leeds
„	*December 17* ...	Birmingham and Gloucester Railway
1842	*February 10* ...	B. & D.J., Whitacre to Birmingham
1844	*May 10*	Midland Railway formed by amalgamation of North Midland, Midland Counties, and Birmingham and Derby Junction Railways
„	*July 6*	Bristol and Gloucester Railway
1846	*July 1*	Leeds and Bradford
„	*August 4*	Nottingham and Lincoln
1847	*September 6* ...	Trent to Pinxton
„	... ...	Shipley to Skipton
1848	*June 12*	Lancaster to Morecambe
„	... ...	Nottingham to Kirby
„	... ...	Completion of Syston to Peterborough line, carried out under great opposition since 1846
1849	*June 4*	Ambergate to Rowsley
„	*August 1*	Leicester to Burton
„	*October*	Kirkby to Mansfield
1850	*June 1*	"Little" North Western Railway, Skipton to Lancaster
1854	... ...	London, Tilbury and Southend Railway (amalgamated 1912)
1857	*May 8*	Leicester to Hitchin, G.N.R. (through trains to Kings Cross, February 1, 1858)
1862	*May 1*	Pye Bridge to Clay Cross
1863	... ...	Rowsley to Millers Dale
1866	*March 1*	Kettering, Thrapston and Huntingdon
1867	... ...	Millers Dale to New Mills (for Manchester, London Road)
1868	*July 13*	Bedford to Kentish Town and Metropolitan Junction
„	*October 1* ...	St. Pancras Station, London
1870	*February 1* ...	Chesterfield and Sheffield
1872	*June 10*	Bedford and Northampton
1875	*May 1*	Radford and Trowell
„	*Autumn*	Freight workings on Settle and Carlisle line
1876	*May 1*	Settle and Carlisle, all traffic
„	*August 1*	Walsall to Wolverhampton
1877	*July 16*	Harpenden to Hemel Hempstead
1879	*July 1*	Water Orton and Walsall
1880	*January 1* ...	Manchester South District line
„	*August 2* ...	Trains worked into Manchester Central instead of London Road

1880	... ...	Kettering and Manton
1893	... ...	Dore and Chinley line
1894	... ...	Tottenham and Forest Gate
1903	*July 1*	New Mills and Heaton Mersey
1904	*September 1* ...	Heysham Harbour and new branch

JOINT RAILWAYS

Name	*Joint Owners*	*Miles of Route*
CHESHIRE LINES	Midland, Great Central, Great Northern	143¼
SOMERSET & DORSET ...	Midland, London & South Western	105½
MIDLAND & GREAT NORTHERN	Midland, Great Northern	183½
PORTPATRICK & WIGTOWN ...	M.R., L.N.W.R., C.R., G. & S.W.R.	82½
CO. DONEGAL	M.R., G.N.R. (I.)	111
ASHBY & NUNEATON ...	M.R., L.N.W.R.	29¼
CARLISLE GOODS	M.R., L.N.W.R., C.R., G. & S.W.R.	1½
CLIFTON EXTENSION	M.R., G.W.R.	9
ENDERBY BRANCH	M.R., L.N.W.R.	2¼
FURNESS & MIDLAND ...	M.R., F.R.	9¾
GREAT CENTRAL & MIDLAND JOINT COMMITTEE ...	M.R., G.C.R.	40¼
GREAT CENTRAL, HULL & BARNSLEY, & MIDLAND ...	M.R., G.C.R., H. & B.R.	4
FORTH BRIDGE	M.R., with East Coast companies ...	4¼
HALESOWEN	M.R., G.W.R.	6
NORFOLK & SUFFOLK ...	M. & G.N., G.E.R.	22¼
NORTH & SOUTH WESTERN JUNCTION	M.R., L.N.W.R., N.L.R.	5¼
OTLEY & ILKLEY	M.R., N.E.R.	6¼
SEVERN & WYE	M.R., G.W.R.	39
SOUTH YORKSHIRE	M.R., G.C.R., G.N.R., L. & Y.R., N.E.R.	20½
SWINTON & KNOTTINGLEY ...	M.R., N.E.R. (built jointly, 1879)	19½
TOTTENHAM & HAMPSTEAD ...	M.R., G.E.R.	4¾
WHITECHAPEL & BOW ...	M.R., District	2
Total mileage of joint lines		851¼
Midland Railway's share		278¾
Midland Railway, lines owned in Great Britain		1,521
Belfast and Northern Counties Railway		265¼
Lines leased and worked, Great Britain and Ireland (including share of jointly-leased lines)		105
Total route mileage, owned, leased, and joint shares		2,170

LONGEST TUNNELS

TOTLEY ...	3 miles, 950 yards		CORBY ...	1 mile, 106 yards	
DISLEY ...	2 „ 346 „		SHARNBROOK ...	1 „ 100 „	
COWBURN ...	2 „ 182 „		GLASTON ...	1 „ 82 „	
DOVE HOLES	1 „ 1,224 „		BELSIZE SECOND	1 „ 62 „	
BLEA MOOR ...	1 „ 629 „		GLENFIELD ...	1 „ 36 „	
BRADWAY ...	1 „ 267 „		CLAY CROSS ...	1 „ 24 „	

NOTE.—*Longest tunnel on a railway jointly owned by the Midland Railway was at Midford, on the Somerset and Dorset* (1 *mile* 69 *yards*).

Appendix B

SUMMARY OF LOCOMOTIVES MIDLAND RAILWAY, DECEMBER 31, 1922

PASSENGER TENDER ENGINES

	Engines in Series
CLASS 1, 2–4–0 (Kirtley and Johnson) Nos. 1-19, 21, 22, 24, 25, 28, 29, 31-33, 35-41, 46, 47, 49, 50, 53, 54, 60, 62, 64, 67-72, 74-78, 80-85, 87, 89, 90, 92-105, 107-110, 112, 113, 115-124, 126-140, 142-147, 149, 150, 152-159, 161-198, 200-281	245
CLASS 1, 4–4–0 (Johnson) Nos. 300, 303-306, 308, 310, 311, 314, 317, 319, 320, 323, 325-327	16
CLASS 2, 4–4–0 (Johnson rebuilds or replacements, saturated) Nos. 328-369, 371-394, 396, 398, 399, 428, 429, 431, 435, 438-442, 445, 449, 450, 451, 457, 460, 465, 467, 469, 472-476, 481	93
CLASS 2, 4–4–0 (Johnson replacements, superheated) Nos. 370, 395, 397, 400-427, 430, 432-434, 436, 437, 443, 444, 446-448, 452-456, 458, 459, 461-464, 466, 468, 470, 471, 477-480, 482-562	142
CLASS 3, 4–4–0 (Johnson, large boiler, saturated) Nos. 707, 712, 716, 720, 734, 737, 742, 747, 749, 750, 751, 753, 756, 758, 759, 762-764, 771, 772, 774, 775, 777-779	25
CLASS 3, 4–4–0 (Johnson, large boiler, superheated) Nos. 700-706, 708-711, 713-715, 717-719, 721-733, 735, 736, 738-741, 743-746, 748, 752, 754, 755, 757, 760, 761, 765-770, 773, 776	55
CLASS 4, 4–4–0 (Deeley, superheated) Nos. 990-999	10
CLASS 4, 4–4–0 (Deeley compound, saturated) Nos. 1005, 1010, 1013, 1017-1019, 1021, 1022, 1025-1030, 1032-1034, 1036, 1041, 1043, 1044	21
CLASS 4, 4–4–0 (Rebuilt Johnson Smith compound, and Deeley compound, all superheated) Nos. 1000-1004, 1006-1009, 1011, 1012, 1014-1016, 1020, 1023, 1024, 1031, 1035, 1037-1040, 1042	24
CLASS 1, 4–2–2 Nos. 600, 614, 627, 628, 632, 633, 635, 638-641, 643-645, 649, 651, 652, 654, 655, 657, 659-674, 676-680, 682, 683	43
Total, passenger tender engines	674

PASSENGER TANK ENGINES

CLASS 1, 0–4–4 (Kirtley and Johnson) Nos. 1200-1211, 1213-1244, 1246-1280, 1283-1304, 1306-1430 ...	226
CLASS 3, 0–6–4 (saturated) Nos. 2000, 2001, 2003-2034, 2036-2038	37
CLASS 3, 0–6–4 (superheated) Nos. 2002, 2035, 2039	3
Total, passenger tank engines	266
Brought forward, passenger tender engines	674
TOTAL PASSENGER ENGINES	940

GOODS TENDER ENGINES

CLASS 1, 0–6–0 (Kirtley, double frames)
Nos. 2314, 2335, 2359, 2369, 2382, 2383 (old M.R. No.), 2383 (old M.R. No. 2311), 2384-2405, 2407, 2408, 2410, 2411, 2413-2417, 2419, 2420, 2421, 2423, 2425, 2427, 2430-2449, 2452, 2453, 2455-2458, 2463, 2465-2471, 2473-2481, 2483-2520, 2522-2528, 2530-2566, 2568-2578, 2580-2588, 2590-2602, 2604-2629, 2631-2650, 2652-2672, 2674, 2675, 2679-2711, 2713-2764, 2766-2796, 2798-2805, 2807-2812, 2814-2817, 2820, 2823-2827, 2829-2833, 2836-2845, 2848, 2850, 2851, 2854-2857, 2859, 2860, 2862, 2864-2867 — 440

CLASS 2, 0–6–0 (Kirtley, double frames)
Nos. 2424, 2451, 2454, 2472, 2567, 2579, 2589, 2603, 2630, 2651, 2673, 2677, 2678, 2797, 2806, 2813, 2818, 2819, 2821, 2822, 2828, 2834, 2835, 2846, 2847, 2849, 2852, 2853, 2858, 2861, 2863 ... — 31

CLASS 2, 0–6–0 (Johnson, small boiler)
Nos. 2900-3135, 3138-3146, 3148-3154, 3157, 3158, 3160-3168, 3170-3172, 3175-3177, 3182, 3184, 3190, 3192, 3195, 3196, 3199, 3206, 3209, 3214-3218, 3220, 3221, 3227, 3229, 3230, 3234, 3236, 3248, 3249, 3255, 3260-3262, 3264, 3270, 3272, 3276, 3279, 3280, 3282, 3289, 3291, 3302-3304, 3311, 3322, 3325, 3333, 3339, 3340, 3342, 3343, 3345-3350, 3352-3354, 3360, 3362, 3363, 3365, 3366, 3368, 3369, 3372, 3376, 3377, 3380, 3382-3385, 3388, 3391, 3393, 3397, 3407, 3411, 3412, 3414, 3416-3418, 3420-3425, 3427, 3430, 3432, 3434, 3437, 3438, 3442, 3445, 3451, 3460, 3461, 3464, 3465, 3466, 3471, 3473, 3475, 3477, 3479-3481, 3485, 3486, 3493, 3498-3501, 3503-3505, 3508, 3511-3513, 3517-3519, 3523-3528, 3530, 3532, 3533, 3535-3537, 3539, 3543, 3545, 3547, 3549, 3551, 3554, 3555, 3557, 3559, 3561, 3566, 3569, 3571, 3574-3577, 3590, 3592, 3595, 3597, 3602, 3611, 3617, 3620, 3623, 3626, 3630, 3632, 3642, 3643, 3648, 3649, 3654, 3657, 3659, 3673, 3677, 3691, 3695, 3696, 3699, 3703, 3707, 3718 ... ... — 453

CLASS 3, 0–6–0 (Johnson, large boiler, and Deeley)
Nos. 3136, 3137, 3147, 3155, 3156, 3159, 3169, 3173, 3174, 3178-3181, 3183, 3185-3189, 3191, 3193, 3194, 3197, 3198, 3200, 3201, 3203-3205, 3207, 3208, 3210-3213, 3219, 3222-3226, 3228, 3231-3233, 3235, 3237-3247, 3250-3254, 3256-3259, 3263, 3265-3269, 3271, 3273-3275, 3277, 3278, 3281, 3283-3288, 3290, 3292-3301, 3305-3310, 3312-3321, 3323, 3324, 3326-3332, 3334-3338, 3341, 3344, 3351, 3355-3359, 3361, 3364, 3367, 3370, 3371, 3373-3375, 3378, 3379, 3381, 3386, 3387, 3389, 3390, 3392, 3394-3396, 3398-3406, 3408-3410, 3413, 3415, 3419, 3426, 3428, 3429, 3431, 3433, 3435, 3436, 3439-3441, 3443, 3444, 3446-3450, 3452-3459, 3462, 3463, 3467-3470, 3472, 3474, 3476, 3478, 3482-3484, 3487-3492, 3494-3497, 3502, 3506, 3507, 3509, 3510, 3514-3516, 3520-3524, 3529, 3531, 3534, 3538, 3540-3542, 3544, 3546, 3548, 3550, 3552, 3553, 3556, 3558, 3560, 3562-3565, 3567, 3568, 3570, 3572, 3573, 3578-3589, 3591, 3593, 3594, 3596, 3598-3601, 3603-3609, 3612-3616, 3618-3620, 3622, 3624, 3625, 3627-3629, 3631, 3633-3641, 3644-3647, 3650-3653, 3655, 3656, 3658, 3660-3672, 3674-3676, 3678-3690, 3692-3694, 3697, 3698, 3700-3702, 3704-3706, 3708-3717, 3719-3834 ... ... — 482

Carry forward goods tender engines ... ... — **1,406**

Passenger engines brought forward	940
Goods tender engines brought forward	1,406
CLASS 4, 0–6–0 (superheated)	
Nos. 3835-4026	192
TOTAL GOODS TENDER ENGINES	1,598

BANKING ENGINE

UNCLASSIFIED FOR POWER, 0–10–0 (superheated)	
No. 2290	1

GOODS TANK ENGINES

UNCLASSIFIED FOR POWER, 0–4–0	
Nos. 1500, 1502-1511, 1513-1520, 1522, 1525, 1528-1537	33
CLASS 1, 0–6–0	
Nos. 1605-1608, 1610-1627, 1629-1959	353
TOTAL GOODS TANK ENGINES	386

Sum:—

Passenger tender engines	674
Passenger tank engines	266
Goods tender engines	1,598
Banking engine	1
Goods tank engines	386
Total steam locomotives, Dec. 31, 1922 (Midland Railway origin) ...	**2,925**

ADDENDA

Battery electric locomotive	1
Coaching vehicles:	
Dining carriages	80
Sleeping carriages	22
All other passenger train stock (steam)	5,917
Electric motor cars (including L.T.S. vehicles)	48
Electric Trailer cars „ „ „	49
Goods rolling stock	107,617
Electric trams (Burton and Ashby Light Railway)	20
Service vehicles	8,098

LOCOMOTIVE SHEDS

The principal motive power depots, and the shed numbers borne by engines stationed at those sheds, were as follow:—

DERBY (1), BURTON (2), BIRMINGHAM (3), WORCESTER (4), BRECON (5), UPPER BANK (6), GLOUCESTER (7), BRISTOL (8), PETERBOROUGH (9), LEICESTER (10), WIGSTON (11), KETTERING (12), WELLINGBOROUGH (13), BEDFORD (14), CRICKLEWOOD (15), KENTISH TOWN (16), TOTON (17), NOTTINGHAM (18), LIVERPOOL (19), BUXTON (20), MANCHESTER (21), WESTHOUSES (22), HASLAND (23), STAVELEY (24), SHEFFIELD (25), NORMANTON (26), YORK (27), LEEDS (28), BRADFORD (29), SKIPTON (30), CARNFORTH (31), LANCASTER (32), and CARLISLE (33).

Appendix C

STEAM LOCOMOTIVES

LONDON, TILBURY AND SOUTHEND SECTION

TYPE	L.T.S. NO.	& NAME	DATE	M.R. NO.	REMARKS
4–4–2T	1	*Southend*	1880	2110	
„	2	*Gravesend*	„	2111	
„	3	*Tilbury*	„	2112	
„	4	*Bromley*	„	2113	
„	5	*Plaistow*	„	2114	
„	6	*Upton Park*	„	2115	
„	7	*Barking*	„	2116	
„	8	*Rainham*	„	2117	
„	9	*Purfleet/Tilbury Dock*	„	2118	Renamed in 1911
„	10	*Grays*	„	2119	
„	11	*Stanford*	„	2120	
„	12	*Pitsea*	„	2121	
„	13	*Benfleet / Black Horse Road*	1881	2122	Renamed in 1910
„	14	*Leigh*	„	2123	
„	15	*East Ham*	„	2124	
„	16	*Low Street*	„	2125	
„	17	*Thames Haven* ...	„	2126	
„	18	*Burdett Road*	„	2127	
„	19	*Dagenham*	1884	2128	
„	20	*Hornchurch*	„	2129	
„	21	*Upminster*	„	2130	
„	22	*East Horndon / Commercial Road* ...		2131	Renamed in 1910
„	23	*Laindon*		2132	
„	24	*Ockenden*	„	2133	
„	25	*Stifford*	„	2134	
„	26	*West Thurrock* ...	„	2135	
„	27	*Whitechapel*	„	2136	
„	28	*Romford*	„	2137	
„	29	*Stepney*	„	2138	
„	30	*Fenchurch*	„	2139	
„	31	*St. Pancras*	1892	2140	
„	32	*Leyton*	„	2141	
„	33	*Wanstead*	„	2142	
„	34	*Tottenham*	„	2143	
„	35	*West Ham*	„	2144	
„	36	*Walthamstow* ...	„	2145	
„	37	*Woodgrange*	1897	2146	
„	38	*Westcliff*	„	2147	
„	39	*Forest Gate*	„	2148	
„	40	*Black Horse Road / Benfleet*	„	2149	Renamed in 1910
„	41	*Leytonstone*	„	2150	
„	42	*Commercial Road/East Horndon*	„	2151	Renamed in 1910
„	43	*Great Ilford*	1898	2152	
„	44	*Prittlewell*	„	2153	
„	45	*Shoeburyness*	„	2154	
„	46	*Southchurch*	„	2155	
„	47	*Stratford*	„	2156	
„	38	*Little Ilford*	„	2157	

TYPE	L.T.S. NO. & NAME	DATE	M.R. NO.	REMARKS
0–6–0	49	1898	2898	Originally intended for the Ottoman Railway from Smyrna to Aidin
„	50	„	2899	
4–4–2T	51 *Tilbury Docks/Purfleet*	1900	2158	Renamed in 1911
„	52 *Wennington*	„	2159	
„	53 *Stepney Green* ...	„	2160	
„	54 *Mile End*	„	2161	
„	55 *Wellington Rd./Bow Rd.*	„	2162	
„	56 *Harringay*	„	2163	
„	57 *Crouch Hill*	„	2164	
„	58 *Hornsey Road* ...	„	2165	
„	59 *Holloway Road* ...	„	2166	
„	60 *Highgate*	„	2167	
„	61 *Kentish Town* ...	„	2168	
„	62 *Camden Town* ...	„	2169	
„	63 *Mansion House* ...	1903	2170	
„	64 *Charing Cross* ...	„	2171	
„	65 *Victoria*	„	2172	
„	66 *Earls Court*	„	2173	
„	67 *Westminster*	„	2174	
„	68 *Mark Lane*	„	2175	
0–6–2T	69 *Corringham*	„	2180	
„	70 *Basildon*	„	2181	
„	71 *Wakering*	„	2182	
„	72 *Hadleigh*	„	2183	
„	73 *Cranham*	„	2184	
„	74 *Orsett*	„	2185	
„	75 *Canvey Island* ...	1908	2186	
„	76 *Dunton*	„	2187	
„	77 *Fobbing*	„	2188	
„	78 *Dagenham Dock* ...	„	2189	
4–4–2T	79 *Rippleside*	1909	2176	
„	80 *Thundersley*	„	2177	
„	81 *Aveley*	„	2178	
„	82 *Crowstone*	„	2179	
0–6–2T	—	1912	2190-2193	Delivered to Midland Rly.
4–6–4T	—	„	2100-2107	

Appendix D

MIDLAND RAILWAY STEAMERS, 1922

Name	*Type*	*G.T.*	*Speed (Knots)*	*Plying between*
Antrim	T.S.	1,951	20	Heysham-Belfast
Londonderry	T.T.S.	1,968	20	,, ,,
Duchess of Devonshire ...	T.S.	1,200	19	,, ,,
City of Belfast	T.S.	993	16	,, ,,
Wyvern	T.S.	214	11¼	Heysham-Fleetw'd
Edith	T.S.	283	9	Tilbury-Gravesend
Gertrude	T.S.	255	9	,, ,,
Carlotta	T.S.	261	9	,, ,,
Catherine	T.S.	259	9	,, ,,
Rose	T.S.	258	9	,, ,,
Tilbury	Paddle	269	8	,, ,,

NOTE.—*" Wyvern," and last four Gravesend ferries for passengers only, others for passengers and freight.*

Appendix E

THE " STEAM TRUMPET "

Extract from *The South Western Gazette,* **June 1, 1893**

The origin of the Railway whistle is somewhat peculiar. In the beginning of the year 1833 the engine " Samson " running on the railway between Leicester and Swannington, came into collision with a cart and horse. The cart was loaded with beetroot and eggs for the Leicester Market. The engine driver could only use the horn he held in his hand as a means of warning, and the consequence was the cart overturned. The accident caused some confusion, and Mr. Ashlett Bagster, the Director of the Railway, went the very same day to Alton Grange, where George Stephenson resided, to consult with him. Bagster asked whether a whistle could not be placed on the engine which would let off the steam. Stephenson replied that the idea was a good one, and was worth trying. The first whistle was made by a musical instrument manufacturer, and gave such good results that the board of directors decided to establish similar whistles on all the company's engines. As the company had to pay for the horse and cart, 50lb. of beetroot and eighty dozen broken eggs, we may say that the whistle has its origin in 960 broken eggs. *Felix qui potent verum cognoscere causas.* After this regulations were enforced which forbade the circulation of locomotives which were not furnished with a steam whistle, or as it might well be called in those days, a steam trumpet. Whistles, as we know them now, were introduced into England in 1836, and into France in 1837 on the first railway of St. Germain. We are told that Mr. Fyfe, Director of the Liverpool & Manchester Railway, was the first to introduce the present-day whistle in 1835. The early whistles consisted of a cylindrical bell of great height with a flat bottom, very like the deep-sounding sirens on steamboats. Later on, the cylindrical bell was replaced by a hemispherical one with a sharp sound. The old form of whistle is sometimes to be met with on American locomotives.

THE MIDLAND RAILWAY

C. HAMILTON ELLIS

To present-day railway enthusiasts the Midland Railway is probably best remembered for its belief in small engines—many of them—and double-heading where necessary, as the most economic locomotive development policy. Out of this grew an attractive line of single-driver and four-coupled express locomotives, topped by the celebrated Midland compounds.

Few may now remember also that the Midland was, by the end of the pre-Grouping era in 1922, the third largest railway in Great Britain in terms of mileage. Formed in 1844 by an amalgamation of the Midland Counties, the North Midland and the Birmingham & Derby Railways, by the end of its career it had pushed train services from its centre at Derby to London, Bristol, Manchester, Carlisle, Lincoln and Swansea, and over jointly-owned lines to Bournemouth and into East Anglia. Its growth continued into the 20th Century with the acquisition of the Belfast & North Counties Railway in 1903 and the London, Tilbury & Southend Railway in 1912. In all its operations, the Midland was a system full of character, fully brought out in this lively memoir by Hamilton Ellis.

"Mr. Hamilton Ellis ..... has produced a delightful and entertaining series of word-pictures, in which history, train services, locomotives, rolling stock and personalities all find a place, and combine to make a fascinating record of a great railway. The illustrations are particularly well chosen. A summary of the opening dates of the principal lines, the mileage owned jointly with other companies, and the locomotives and steamships owned in 1922 are given in a series of appendices"—*The Railway Magazine.*

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